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ALASKA AGRICULTURAL EXPERIMENT STATIONS
SITKA, ALASKA

Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

REPORT OF THE
ALASKA AGRICULTURAL
EXPERIMENT STATIONS

1925

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ALASKA AGRICULTURAL EXPERIMENT STATIONS, SITKA, KODIAK,
RAMPART, FAIRBANKS, AND MATANUSKA

[Under the supervision of the Office of Experiment Stations, United States Department of Agriculture]

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REPORT OF THE DIRECTOR

C. C. GEORGESON

The Alaska agricultural experiment stations are located in widely separated regions of greatly varying climatic conditions. Each station deals with a specific class of projects which are related to the region, and is, therefore, treated separately in this report.

SITKA STATION

Southeastern Alaska is noted for its cool, wet summers and comparatively mild winters, and is admirably suited to horticulture. The heavy rains, usually beginning in July and continuing through the growing season, prevent grain crops from ripening, but vegetables and berries of the hardier sorts can be grown. Dry weather prevails during the latter part of May and the early part of June, and at times causes all kinds of garden crops to suffer. All crops do not do equally well in all regions, and the Sitka station has therefore been working for many years to develop varieties promising the greatest success under the soil and climatic conditions of southeastern Alaska. Those varieties only which are expected to succeed were tested during the fiscal year 1925. Strawberries and potatoes are among the leading crops of the station, and efforts are being continued to improve them for adaptability in the various parts of the Territory.

STRAWBERRIES

Over 12,000 hybrid strawberries have been produced and tested at the Sitka station. (Fig. 1.) Varieties doing well in the more southern latitudes failed to do well when introduced into Alaska. In the coast region they suffered from heavy rains in summer and were

killed by alternate freezings and thawings in winter, and in the interior they failed to withstand the extreme temperatures prevailing. All the hybrid strawberries have been produced by crossing standard cultivated varieties with pollen from two wild native species (*Fragaria chiloensis* and *F. platypetala*). *F. chiloensis*, the wild strawberry of the coast region, grows along the beaches for hundreds of miles as far west as Kenai Peninsula. This species, when crossed with introduced commercial varieties, imparted to the resulting hybrids qualities adapting them to the climatic conditions in Alaska, particularly in the coast region. *F. platypetala*, which grows only in the interior, is probably the hardiest strawberry known. This species, when used to pollinate standard varieties, produced hybrids showing a high degree of hardiness.

During the season tests of the hybrids were continued, and a few of the many resulting seedlings produced large, luscious berries. Not all of the numerous varieties were deemed worthy of increase, and



FIG. 1.—Hybrid-strawberry nursery, Sitka station. There are several such plats at the station

only 200 of the best have been retained for further testing. These are to be propagated for distribution throughout the Territory. Several dozen varieties prove to be hardy in regions of the interior where the temperature falls to 60° F. below zero, whereas several hundred varieties can be grown in the coast region. All the strawberries which are grown for domestic use and for market in the interior and most of those grown in the coast region are of Sitka origin. The stations have demonstrated that strawberries can be successfully and profitably grown in Alaska, and strawberry growing is destined to become an important branch of horticulture in the Territory.

POTATOES

Perhaps no crop is more generally cultivated in Alaska than is the potato. It is the principal money crop, and is used by everybody. Each town garden and prospector's cabin has its potato patch. The many mining camps consume large quantities of potatoes, most of which are produced locally.

All varieties of potatoes do not do equally well in any given locality. Commercial varieties which are grown extensively in the Yakima Valley of Washington and elsewhere on the Pacific coast are not, as a rule, well adapted to Alaska. Some of them may be gradually acclimated, but others deteriorate. The stations, and more especially the Sitka station, has succeeded in developing varieties that are eminently suited to Alaskan conditions. The potatoes produced during the early days were watery and immature. Settlers cleared and cultivated the bottom lands, probably believing that the soil was richer than on the hillsides, and the crops suffered from late frosts in spring and early frosts in fall. The station remedied matters by growing selected varieties under improved methods of culture. Varieties which were grown at Fairbanks on south-slope land were dry and mealy. The air drainage is good on these hillsides, and light frost does not injure the potato tops. By sprouting seed potatoes before planting the plants were enabled to obtain a longer growing season. At all the stations seed potatoes are now placed in warm rooms to produce sprouts an inch or more long before the planting season begins. The sprouted tubers are carefully handled in planting, and the growth is equivalent to that made during a season lengthened two or three weeks.

At the Sitka station upward of 1,400 seedling varieties have been grown in an experiment for the production of new varieties of potatoes from seed balls. The seed giving the best results was raised at the station. Approximately 200 seedling varieties were added to the list during the year. Tests covering three years or more are necessary to ascertain the merits of the new seedlings. Points to be considered include yield, earliness, uniformity and shape of tuber, smooth skin, shallow eyes, and cooking qualities. All seedlings lacking in these requisites are discarded. Desirable seedlings are named and propagated for trial at the other stations, and thence distributed in small lots to interested settlers. Some of the seedlings doing best in the coast region do not prove to be adapted to the climate of the interior, and, conversely, seedlings ranking high in the interior fail to thrive in the coast region. Only enough of each variety is planted to compare its relative merits. At Sitka the number varies from 10 to 40 hills, according to the available seed and the character of the soil. Seed showing signs of scab is soaked for two minutes in a formaldehyde solution (1 pint to 10 gallons of water) before planting. The experimental plats are daily watched during the growing season, and plants developing disease are immediately removed and destroyed.

Whole potatoes of medium size were planted in the field on May 14. The product of all the hills of each variety and of some of the individual hills were weighed at digging time. Yields were not high because the crop had to be grown on a poor soil in order to use soil not previously devoted to potatoes. Seedlings making the best yields include June (No. 1088), 42 pounds from 20 hills; No. 1186, 35 pounds from 16 hills; No. 1282, 29 pounds from 10 hills; No. 1295, 23 pounds from 10 hills; and No. 1304, 34 pounds from 12 hills.

Seed balls which were produced at the station in 1924 on Rural New Yorker were seeded in flats in the propagating house and later the resulting seedlings were transplanted to the open. They made good growth and many produced potatoes the size of walnuts and larger when harvested on October 1. Alida (No. 368), the

highest yielding potato at the Matanuska station, is a variety originating at the Sitka station. The potato tests are being continued. (See pp. 15, 26.)

VEGETABLES

Cabbage, cauliflower, kale, and other vegetables, the seed of which was sown in flats in the propagating house on March 16, were pricked out when 1 to 2 inches high and set in larger flats. The young plants were later transferred to coldframes to be hardened, and on May 8 were set in the open. The station again used tar-paper disks to protect the plants from root maggots, which are destructive to members of the Cruciferæ family throughout Alaska. The disks are round pieces of tar paper having in the center a small hole which is slit to the edge. The disk is slipped around the stem of each plant when it is planted. The maggot is the larva of a small fly which lays its eggs on the leaves or on the stem near the ground. When the eggs hatch the larvæ wriggle down the stem to the ground. If the paper disk fits snugly around the stem, the larvæ can not reach the roots of the plant and die. Tobacco dust also was placed around each plant early in the season, and aided in keeping the pest in check.

Cabbage.—Cabbage is commonly grown in Alaska. During the year the varieties Copenhagen Market, Flat Dutch, Danish Ballhead, Short Stem Danish Roundhead, Early Jersey Giant, and Savoy were grown in short rows. Flat Dutch and Copenhagen Market produced the best heads, some of which weighed upward of 20 pounds. A head of Flat Dutch weighed 24 pounds.

Cauliflower.—This vegetable can be grown throughout Alaska with gratifying success. Four varieties were set in the open on May 8. Early Snowball produced the best heads, followed by Early Dwarf Erfurt, Dry Weather Danish Giant, and Autumn Giant, in the order named. A total yield of approximately 125 pounds of solid heads, or at the rate of upwards of 12 tons per acre, was obtained from a row 75 feet long.

Broccoli.—This vegetable is very similar to cauliflower. The varieties Snowdrift and White Cape were set in the open on May 13. Snowdrift did exceedingly well.

Brussels sprouts.—This member of the cabbage family is well adapted to Alaska. The variety Odense Market was planted in the open on May 16 and produced excellent heads.

Kale.—This delicious green is excellent for winter use. Kale deserves to be much more generally cultivated. It is not a salad plant, but should be cut up coarsely and boiled preferably with fat meat. Kale, often called Scotch kale, is grown throughout Scotland, England, Scandinavia, and Germany. It is hardy, winters well in southeastern Alaska, and its flavor is improved by frost. Kale is treated in all respects like cabbage. The varieties Odense Market and Decorative were set in the open on May 9, and did well. The former produced a heavy crown of curly leaves. The latter has mottled red leaves, and is largely used to garnish dishes.

Kohl-rabi.—This vegetable belongs to the cabbage family. The stems are swollen at the surface of the ground. These enlarged stems are very tender while young. The White Vienna, Purple Vienna, and Dreienbrunnen varieties were set in the open on May 11. The two Vienna varieties were the best of the three.

Celery.—The varieties Paris Golden Yellow Self-Blanching, White Plume, and Easy Blanching were grown. The two first-named were best. Some of the plants ran to seed during the wet weather. The plants should not be set more than 6 inches apart in the row. The seed should be sown early in flats and the young plants when an inch high should be pricked out and set 2 inches apart in larger flats to harden. The plants can be transferred to the open in early June when they are about 4 inches high. Probably the simplest method of blanching celery is to inclose the beds with boards and fill up the space between with soil.

Celeriac.—This member of the celery family develops a large, tender, fleshy root at the surface of the ground. Celeriac is a favorite vegetable in Europe. The varieties Prague Giant and Ne Plus Ultra were grown and did equally well.

Beets.—Beets are not always a success in Alaska. They require a rich, well-drained soil, and are apt to run to seed the first year if the ground is wet. Four varieties were sown in the open on May 9, and yielded 168 pounds from a row 100 feet long, or at the rate of upward of 14 tons per acre. Early Wonder took the lead, followed by Detroit Dark Red, Early Blood Turnip, and Early Crimson Globe, in the order named.

Carrots.—The carrot is an important source of the vitamins and should be grown in every garden. The varieties grown for table use included, in the order of their merit, Model, Danvers, Improved Coreless, Butter, and Stensballe. The Yellow Champion and White Belgian Giant varieties were grown for stock feed. Yellow Champion did very well.

Onions.—This vegetable is rarely a success in Alaska. It is apt to run to seed unless grown in a well-drained, good soil. The seed can be sown in flats in the propagating house, or directly in the ground. At the station the best onions were produced by plants which had been started from seed in the greenhouse. The varieties grown from seed in the greenhouse are, in the order of their merit, Southport Red Globe, Yellow Prizetaker, Yellow Globe, and White Bunching. Seed was also sown in the open, but the result did not compare with that from plants that were started in the greenhouse. In the latter instance the plants yielded 42 pounds from a row 40 feet long.

Leek.—Leek is highly prized in certain parts of Europe, but is seldom grown in Alaska. The seed should be sown in the greenhouse and the young plants transplanted to the open about May 15. Both the varieties Bulgarian Long and Carentan Giant did well during the year.

Parsnips.—Parsnips are found growing in nearly every garden in Alaska. Hollow Crown and Guernsey were the only varieties tried at the station. The parsnip is hardy and can be left in the ground all winter without deteriorating. The seed should be sown in the open as soon as the weather permits. The young plants will not stand transplanting.

Parsley.—Parsley leaves are used for garnishing and for flavoring soups. The varieties Moss Curled and Garnishing were grown during the year and were of equal merit. The seed should be sown in the open but can be started in the greenhouse. Green parsley can be had all winter by growing the plants in boxes indoors. The vegetable is hardy and winters well in southeastern Alaska.

Lettuce.—No salad plant is more in demand in Alaska than is lettuce. Head lettuce is shipped into the country all during the winter and can be bought at nearly every town grocery. All varieties can be grown with excellent results. The vegetable is not hardy and must be protected from frost. For winter use it can be grown under glass. For summer use several seedings should be made some two or three weeks apart to keep the supply constant. The loose-leaf varieties are adapted to early use, and, if grown in boxes in the greenhouse or in coldframes, can be available at any time. The seed of the head lettuce also can be sown under glass and the young plants transplanted as soon as the weather permits, or the seed can be sown in the open and the resulting plants thinned to 4 or 5 inches apart to form heads. The varieties tried during the year were Grand Rapids Forcing, Big Boston, Iceberg, Lyon, Tenderheart, and New York. Grand Rapids was the best leaf variety, and New York produced the largest and most solid heads.

Peas.—Peas also do well everywhere in Alaska. At the station nearly every variety has been tried in former years. The varieties tried during the year included American Wonder, Thomas Laxton, Hundredfold, Gradus, Alderman, Prince Edward, and Mammoth Melting Sugar. Some varieties are early and others are late; some are dwarf and others are tall-growing; some need brush or other support and other varieties do not need a support of any sort. All did well, but Gradus was one of the best for table use. Alderman and Prince Edward grow very tall and must be supported with brush or wire netting.

Spinach.—This vegetable is not always a success in Alaska. Usually it runs to seed, instead of producing leaves, if seeded in wet ground. Seed of King of Denmark, Princess Juliana, and New Zealand was sown on May 12. The first two named varieties ran to seed more than did New Zealand, which is, therefore, considered best for Alaskan conditions.

Swiss chard.—This vegetable is well adapted to Alaskan conditions. Lucullus, the only variety grown during the year, was seeded on May 13. Chard is grown for its succulent leaf stems.

Rutabagas.—The climate of Alaska is well suited to rutabagas. The roots attain large size. Rutabagas which were grown at Haines and shipped to Seattle, Wash., brought a higher price than was obtained for the vegetable grown around Puget Sound. The varieties grown at the station included Bangholm Purple Top, Yellow Swedish, and Wilhelmsburger, the last of which yielded at the rate of 18 tons per acre.

Rhubarb.—This vegetable makes enormous yields and is a favorite everywhere in Alaska. Stalks measuring approximately 2 inches in diameter and 2 feet in length are commonly found. Some of the leaves are 3 feet 10 inches across. Giant Red, the most vigorous of several varieties tried at the station, is now the only variety grown. Rhubarb requires a rich soil for its best growth. At the station two good shovelfuls of well-rotted stable manure are placed on the plants in the fall and worked in around them in the spring. This method of culture assures large, heavy stems. Rhubarb can be grown with profit. The stems sell wholesale at 3 cents per pound. The crop can be forced out of season for sale during the winter and early spring at 5 to 10 cents per pound. Strong, old roots are dug for the purpose

and transplanted to a place which is heated during the winter. When the crop has been harvested the roots are discarded. New roots are in the meantime raised from seed or by dividing old roots. Seedlings grown in rich soil are ready for forcing in two years, and old roots that have been divided, in one year.

SMALL FRUITS

Raspberries.—Cuthbert is considered the best of many varieties of raspberries tested at the station, including Ranere (St. Regis), Sunbeam, and Miller. In a single row 116 feet long Cuthbert yielded 105 quarts of large, luscious berries, or at the rate of 6,650 quarts per acre. The plants do not require winter protection in southeastern Alaska, and are late in fruiting. The first picking is made usually about August 15.

Currants.—Red and black currants are indigenous to Alaska. Red currants grow wild in the woods as far north as the Arctic Circle and beyond. Of the many varieties tested at the station in past years the Holland (Long-bunch Holland) is the best. The white and black currants in common cultivation also do well. The plants should be set 4 feet apart each way, and the ground should be kept cultivated.

Gooseberries.—Downing, Champion, and Whitesmith, an English variety, are the best varieties of gooseberries so far tried. Only a few plants were grown.

DISTRIBUTION OF NURSERY STOCK

During the year the station continued to propagate for distribution raspberries, gooseberries, strawberries, currants, apple trees, and ornamental shrubbery. Plants were sent to all parts of Alaska. Yellow Transparent is the only variety of apple now distributed. The station has very materially aided in introducing these fruits into the Territory, and receives many reports concerning the behavior of the plants and trees.

ORNAMENTALS

Shrubs.—The leading ornamentals under test include Tatarian honeysuckle (several varieties), red flowering currant (*Ribes sanguineum*), Siberian dogwood, snowball, snowberry (*Symphoricarpos racemosus*) weigelia, philadelphus, cotoneaster, spireas (several varieties), and the hardy Japanese rugosa rose (*Rosa rugosa*). The Japanese rose does well in Alaska. In July and early August it produces large, bright red, sweet-smelling flowers. The plant is thorny and can be used for hedges if desired. The blossoms are followed by large, red ornamental seed pods. At the station the rose is propagated from the rose hips. The seed is removed from the hips in the fall, mixed with sand, placed in a box, and set out of doors for the winter. The mixture of seed and sand is sown in rows in the spring. Thus treated, the seed germinates freely. The young plants are set in nursery rows the following spring, and after a year in the nursery are ready for distribution. Certain rugosa hybrids have been tested at the station. Grafted roses fail to do well. Often the top dies, leaving only the stalk on which it was grafted. Only roses on their own roots should be introduced. Some grow freely from cuttings; others strike root with difficulty and can be grown only in a propagating house under heat. Many single roses can be grown from seed, but

the doubled-flowered varieties must be raised from cuttings. The many varieties of roses which grow so successfully in Portland, Oreg., and on Puget Sound usually do not survive the winters in Alaska. Good-sized plants may do well the first summer, but they deteriorate or die during the second summer. The rugosa varieties are the hardiest of the shrubs and best suited to Alaska.

Bulbs.—In 1923 an experiment was begun at the Sitka station with daffodils, tulips, English iris, and gladioluses to determine the possibility of their growing in this climate. All the plants have been successfully brought into bloom at the station, and bulblets have formed. The station has demonstrated that bulbous plants can be successfully grown in southeastern Alaska, but it is not known whether tulips and daffodils, which must be planted in the fall, will survive the winter in the interior. Gladiolus bulbs are not hardy and must be planted in the spring. They are taken up in the fall and kept in storage until spring, when the bulblets are removed and set out separately. On rich, well-drained soil the bulblets attain blooming size in two years. Daffodils that have been forced under glass for early blooming and then set in the open have perpetuated themselves from year to year, so there is no question about their availability for Alaska gardens, and growers need no longer purchase costly bulbs from outside sources. The lily (*Lilium regale*) has also been tried at the station, but it is not known yet whether the bulbs can be raised from seed.

CORN

During the year the United States Department of Agriculture requested that a trial be made at the station of seven varieties of dwarf early corn, including Nos. 465, 469, 478, 514 (Gaspe Flint), and 513 (Nova Scotia Yellow), Howe's Alberta Flint, and Pickaninny Sweet. These were planted in good soil as soon as received, but failed to produce even a tassel or silk. A few of the plants produced some small nubbins at Matanuska. So far no variety of corn has been found to be suited to Alaska. (See p. 15.)

ARTICHOKE

The White Jerusalem artichoke was again tested during the year and was a great success. The tops grew 8 feet high and were as readily eaten by the station horse as were the green oats fed with them. A small patch yielded a satisfactory crop of tubers. The artichoke is a valuable forage crop, and the tops seem to be well adapted to silage making. Smaller tubers are produced in the interior than at Sitka, and as yet it has not been satisfactorily demonstrated that they will survive the winter when left in the ground. At Sitka they are left in the ground until spring. The tubers shrivel and dry even when they are kept in moist earth if dug in the fall and placed in a root cellar. Some 600 pounds of tubers were shipped to the Matanuska station for planting as a silage crop in 1926. The tubers will be grown at Sitka and a quantity of them sent to Matanuska in time to plant in the spring. The crop makes a heavy yield when it is grown in good soil at Matanuska. (See p. 14.)

MATANUSKA STATION

This station is located in the Matanuska Valley 36 miles from Anchorage and about 2 miles from the head of Knik Arm on Cook Inlet. The region is well adapted to mixed farming, and is believed to be especially well suited to dairying. It is one of the best farming regions so far developed in Alaska, and compares well with the Tanana Valley. The soil is fine silt loam containing comparatively little gravel. The station is devoting its energies to general farming, combining grain growing with cattle and sheep raising. The work of clearing the primeval forest for the station was begun in 1917 and gradually extended until to day a total of 125 acres are under cultivation. Some of the land is comparatively level. Other portions are characterized by deep erosions, and should be seeded with pasture grasses to prevent surface washing.

During 1925 weather conditions on the whole were favorable for crop production, although the early summer was too dry and the late summer too wet for best results. During the growing months the total precipitation was distributed as follows: May, 0.07 inch; June, 2.2 inches; July, 0.7 inch; and August, 3.06 inches, totaling only 6.03 inches. The rainfall for the calendar year totaled 20.14 inches and the snowfall for the winter (1924-25) approximately 65 inches. The melting snows are absorbed by the soil and supply moisture to crops growing in the early summer when all interior Alaska may suffer from drought. The maximum temperature for the summer, 77° F., occurred in July, and the minimum temperature for the winter, 30° F. below zero, was in January. The last killing frost of spring occurred May 17, and the first in the fall September 23, giving a frost-free period of 129 days.

FIELD CROPS PLAT WORK

Field crops consisted of $10\frac{3}{4}$ acres of oats, $23\frac{1}{2}$ acres of oats and peas, slightly less than an acre of barley, $17\frac{1}{2}$ acres of barley and peas, $7\frac{1}{2}$ acres of barley and vetches, $2\frac{1}{4}$ acres of wheat, $2\frac{1}{4}$ acres of peas, one-half acre of vetches, one-half acre of winter rye, $3\frac{1}{4}$ acres of potatoes, and $1\frac{1}{2}$ acres of roots. Nineteen acres, mostly on steep hillsides, were seeded with grass for permanent pastures, and part of the grass was mixed with grain as a nurse crop. All the crops were weighed, and cost of production and money value were carefully recorded.

WINTER GRAIN

Rye.—Of the fall-sown grains tested at the station, winter rye alone survives the winter. The crop will probably never become important for interior Alaska because the straw is too stiff to be of value as a stock feed and there is practically no demand for grain for flour making. Winter rye must be seeded about the last of July or the first of August so that the plants may become established before frost. Early seeding also aids in developing fall pasture, especially for calves and other young stock. At the station a small area is devoted to the crop for the purpose of maintaining the seed. The crop was pastured to June 15 and was ripe and harvested September 17. The straw was 6 feet tall and had well-filled heads, but the yield was at the rate of only 11.4 bushels per acre. Winter rye is an excellent nurse crop for grass.

Wheat.—None of the many varieties of winter wheat tested at Matanuska, Rampart, and Fairbanks has been found to survive the winters. The Russian variety, Kharkov, usually makes a 5 to 15 per cent stand, and at times the scattered plants have ripened seed which it was hoped would do better than that obtained from outside sources. However, results of experiments showed that winter wheat from Alaska-grown seed is no hardier than that from seed obtained elsewhere.

SPRING GRAIN

Variety tests.—The first requisite in grain growing is to ascertain the variety thriving best in any given locality. Earliness, rather than yield or richness in gluten, is an indispensable feature in grain growing in Alaska. A variety of wheat capable of yielding 40 bushels per acre would be of little value unless the grain matured before fall frosts. Hence, the varieties of grain, whether wheat, oats, or barley, to be recommended for general culture in Alaska are those only which mature within the frost-free period of 110 days or less—that is, the time between the last frost of spring and the first frost in fall. In the Tanana Valley, which lies 300 miles north of Matanuska, the frost-free period seldom exceeds 100 days, and often it is only 92 or 93 days. The stations have been working for many years to discover and develop early-maturing varieties of grain. These are then compared with each other to determine their relative merits, and only the best are recommended for general culture.

Of the spring wheats, Siberian No. 1 (Khogot), of Russian origin, is the earliest tested at the station. It matures in 90 to 100 days under normal conditions. The growing season may be prolonged to 100 days if the crop is grown on low ground or during a period of rainy summer weather. During the unfavorable season of 1922 Siberian No. 1 failed to mature fully at the Matanuska station before frost, but the immature grain was found to be usable for seed. Germination was successfully made at Fairbanks in 1924 with seed grain that had been frosted before maturing at Matanuska in 1923.

Table 1 gives a record of all the varieties of spring wheat, barley, and oats tested at the station in 1925.

TABLE 1.—*Results of variety test of grains seeded at the Matanuska station, 1925¹*

Variety	Date seeded	Stand	Date headed	Uniformity	Height	Date matured	Yield of grain per plat	Yield of straw per plat	Length of time required to mature from seed			
Spring wheat:												
Tulun	May 15	P. ct.	80	P. ct.	98	July 20	32	Aug. 22	24	Lbs.	60	99
Irkutsk	do	100	do	100	32	do	32	do	25	do	66	99
Beta	do	80	July 22	95	40	do	40	do	27	do	68	99
Siberian No. 1	do	90	July 20	95	36	Aug. 26	28	do	28	do	62	103
Omega	do	80	July 22	80	34	do	30	do	30	do	78	103
Ruby	do	80	do	70	36	Aug. 29	39	do	76	do	106	
Hybrid No. 63	do	90	July 23	60	40	Sept. 3	27	do	72	do	111	
H. G. (Rampart)	do	95	July 20	80	34	Sept. 2	21	do	72	do	110	
Federation (C. I. No. 4733)	do	60	July 25	50	30	do	23	do	66	do	110	
Kota	do	95	July 22	70	42	do	31	do	76	do	110	
Hybrid No. 64	do	85	do	90	40	do	25	do	70	do	110	
Red Bobs	do	85	do	40	36	do	30	do	66	do	110	

¹The plats were 140 feet long and 8 drill rows wide, the drills being 8 inches apart.

TABLE 1.—*Results of variety test of grains seeded at the Matanuska station, 1925—Continued*

Variety	Date seeded	Stand	Date headed	Uni-form- ity	Height	Date matured	Yield of grain per plat	Yield of straw per plat	Length of time required to mature from seed
Oats:									
Golden Rain	May 17	P. ct.	July 28	P. ct.	Ins.	Sept. 2	Lbs.	Lbs.	Days
Hybrid No. 51	do	90	Aug. 2	85	36	Sept. 10	41	94	108
Leader	do	90	do	80	40	Sept. 6	18	69	116
Hybrid No. 36	do	75	Aug. 4	85	40	Sept. 10	38	80	112
Heavyweight	do	90	Aug. 1	80	44	Sept. 6	33	79	116
Twentieth Century	do	80	do	90	38	Sept. 6	32	70	112
Barley:									
Hybrid No. 19	do	90	July 20	90	46	Aug. 20	24	60	95
Do	do	90	do	90	46	do	25	64	95
Hybrid No. 14 ²	do	80	July 26	70	48	Aug. 29	16	44	104
Hybrid No. 14 ³	do	50	July 23	75	48	Aug. 24	16	56	99
Hybrid No. 28	do	75	July 20	90	48	Aug. 26	21	78	101
Hybrid No. 20	do	75	do	75	48	Aug. 25	24	80	100
Do	do	40	July 18	80	46	do	18	73	100
Do	do	40	do	80	46	do	17	71	100
Olds Montana	do	50	July 20	90	40	do	21	68	100
Hybrid No. 44	do	98	do	90	38	do	14	70	100

² Six-rowed.³ Two-rowed.

The heavy-yielding varieties, for example Federation wheat, which is a great favorite in Oregon, and some of the oats, required more than 110 days to mature, and are not, therefore, dependable for Alaska. Each of the varieties was seeded on a plat 140 feet long and 8 drill rows wide, the drills being 8 inches apart.

Hybrid oats No. 36 was attacked by rust August 10 and the blades were fired to the top August 15. A small portion of the plats of Heavyweight and Twentieth Century were also attacked. Smut showed in every variety except Golden Rain, and the infected plants were immediately pulled. Golden Rain is the most promising of the varieties of oats tested for grain production and earliness.

Of the barleys, Hybrid No. 19 easily leads in production and earliness, and stands second in stiffness of straw. Hybrid No. 28 stands first in stiffness of straw and is desirable for sowing with peas and vetches.

GRAIN HYBRIDS

Former reports have noted the development, during the past 15 years, of a number of hybrid grains at the Rampart and the Fairbanks stations, especially at Rampart. Every effort was made to develop early-maturing varieties with vigor, large heads, and heavy yields. Some success was attained, but the more vigorous varieties continued to require the longer growing season. The early varieties of grain have their home either in high altitudes or in high latitudes where the summers are short. Crosses between late-maturing and early-maturing varieties have not yet produced hybrids which are as early as the earliest parent, but both vigor and yield have been improved, and the ripening period has been advanced as compared with that of the late-maturing parent. The work is being continued at Fairbanks, and is mentioned here to call attention to some of the hybrids which were tested at the Matanuska station in 1925. The first five varieties of wheat given in Table 1 are of Russian origin. The only hybrid

wheats in the list are Nos. 63 and 64, which are the result of crossing Siberian No. 1 with medium-early varieties. Siberian No. 1 is the mother of Hybrid No. 64, and the staminate parent is Marquis. Both hybrids are larger than is the mother, but neither is as early. They may possibly be of value in regions where the normal growing season between frosts is 110 or more days.

Of the six barley hybrids tested, Nos. 19 and 20 are of outstanding merit, as is shown by the results obtained. Hybrid No. 19 is decidedly the better of the two, and is early enough to mature every year all over interior Alaska. Hybrid No. 19 is vigorous, has long, beardless heads each of which bears 60 to 76 hull-less kernels. Its yield is superior to that made by commercial varieties, the grain weighing 60 pounds per measured bushel as compared with 50 pounds per bushel from the former varieties. Hybrid No. 19 has stout straw which does not lodge as readily as that of other barleys and affords a partial support to peas and vetches when the crop is seeded with them.

Neither of the hybrid oats Nos. 51 and 36 tested did as well as some of the commercial varieties; however, Hybrid No. 51 is a hull-less oats and the yield is therefore not directly comparable with that of the hulled varieties.

GENERAL CROP WORK

Spring wheat.—Sown May 21 at the rate of $1\frac{1}{4}$ bushels per acre on $1\frac{1}{2}$ acres of land, the variety Romanow was ripe September 17, 119 days later. The crop occupied a series of 0.1-acre plats and when threshed yielded 2,645 pounds of wheat and 3,724 pounds of straw. Since the cost of growing the crop was only \$58.74, the profit, at the local market value of \$124.42, was \$65.68, or \$39.09 per acre. Romanow wheat is of Russian origin, makes rather vigorous growth, is medium early, and bearded. It is well adapted to the Matanuska Valley and may be given the preference for general culture among the farmers. In the Tanana Valley the variety is sometimes caught by frost before maturing.

On May 15 Siberian No. 1 was sown at the rate of 1 bushel per acre on a series of 0.1-acre plats. The crop was ripe August 25, 102 days after seeding. Eight-tenths of an acre yielded 875 pounds of grain and 1,390 pounds of straw having a local market value of \$41.95.

Barley.—Hybrid barley No. 19, 105 pounds per acre, and vetch, 40 pounds per acre, were sown on $7\frac{1}{2}$ acres of land. The stand was reduced by the dry weather of early summer, but later revived by showers. The area yielded 6,860 pounds of grain and 8,228 pounds of straw having a local market value of \$320.38. The crop showed a profit of \$115.49 over cost of production.

Hybrid barley No. 19, 75 pounds per acre, and field peas, 40 pounds per acre, sown on 5.1 acres, yielded 5,166 pounds of hull-less grain and 6,834 pounds of straw. The crop had a market value of \$249.20. Produced at a cost of \$141.11, it netted \$108.09 over cost of production. The straw is worth \$20 per ton.

Hybrid barley No. 28 and field peas were sown as a nurse crop for grass on $3\frac{1}{2}$ acres of hillside land and harvested with the scythe. An acre yielded $5\frac{3}{4}$ tons of silage, and the remainder of the crop was cured on pole racks and threshed. The crop, including the 70 pounds of grass seed, was produced at a cost of \$162.47. The silage was produced at a cost of \$8.06 per ton. The threshed grain weighed

2,736 pounds and had a local value of \$109.44. The straw yielded 5,739 pounds and had a local value of \$53.79. The crop was produced at a profit of \$18.88 per acre for grain and straw, and \$13.13 for silage over cost of production.

Oats.—Varieties of oats proving too late to mature during the past two years have been rejected for further testing. Six varieties were tested during the year. Leader oats, sown on $1\frac{1}{4}$ acres of land, yielded 41.1 bushels of grain and 1,083 pounds of straw.

Oats, 80 pounds per acre, and peas, 36 pounds per acre, were sown on $2\frac{3}{4}$ acres of land for silage. The crop yielded 36,240 pounds of silage at a cost of \$112.96, or \$6.24 per ton delivered at the silo.

Oats, 90 pounds per acre, and peas, 60 pounds per acre, sown on a $1\frac{1}{2}$ -acre plat that was fertilized with 200 pounds of sodium nitrate and tankage in equal parts, yielded 17,370 pounds of silage costing \$6.46 per ton.

Leader oats was sown at the rate of 100 pounds per acre on $5\frac{1}{2}$ acres of rented land 4 miles from the station. The crop was cut for hay September 19, yielded 1 ton per acre, and was produced at a cost of \$29.57 for the hay delivered to the barn, or \$5.37 per ton.

Leader oats and purple vetches, sown on an 0.8-acre plat in the rotation plats, produced $7\frac{1}{2}$ tons of silage per acre.

Shadeland Climax oats, 100 pounds per acre, sown with Canadian field peas, 33 pounds per acre, on 3 acres of old land, yielded when threshed 3,240 pounds of grain and 2,678 pounds of straw. The crop was produced at a cost of \$91.92, or \$30.84 per acre, and had a local market value of \$118.40.

Swedish Select oats and Canadian field peas, sown on 2 acres of old land, yielded 1,794 pounds of grain and 2,756 pounds of straw. The cost of production was \$22.18 per acre.

Black Norway (Norwegian Black) oats, 100 pounds per acre, and field peas, 25 pounds per acre, sown on $5\frac{1}{2}$ acres of old land, yielded 6,076 pounds of grain and 8,060 pounds of straw. The crop was produced at a cost of \$28.52 per acre and had a local market value of \$292.95, or \$53.26 per acre.

Four acres of newly cleared land were seeded with Black Norway oats at the rate of 100 pounds per acre for hay and silage. The crop was cut September 7 and yielded 195,000 pounds of silage. The cost of production was \$108.76, or \$27.19 per acre. Delivery at the silo was paid for at the rate of \$11.01 per ton. Hauling was expensive because the field is 2 miles from the barn.

A 5-acre plat, sown with North Finnish (Finnish Black) oats, 100 pounds per acre, and vetch, 140 pounds per acre, yielded 24,280 pounds of silage. The cost of production was \$132, or \$26.40 per acre.¹

MAINTENANCE OF SOIL FERTILITY

Farming lands in the Matanuska Valley have been continuously cropped partly in grain and partly in potatoes for the last eight or nine years, and the soil is beginning to show exhaustion as a result. The natural maintenance and increase of fertility can be brought about only by employing some fixed scheme of rotation. Among the crops that are suited to the region are spring wheat, barley, oats,

¹ Alaska Stas. Bul. 6, Cereal Growing in Alaska, copies of which may be had by addressing the director.

peas, vetches, and roots. During the year the station began a series of rotation experiments on 44 tenth-acre plats. A five-year rotation, including wheat, peas, barley, oats and vetches, and roots, in the order named, is planned, but can not yet be strictly followed because of the necessity of growing crops for silage and the lack of sufficient cleared land. The plats were replicated so that an average can be obtained. The station is also planning to raise the same kind of crops permanently on special plats without rotation to compare the yields from rotated and nonrotated areas. The plats have been carefully measured and the corners marked with iron stakes driven 2 feet into the ground. Each series of plats is separated by an alley which is sufficiently wide to enable wagons and cultural implements to operate without injuring the crops.

Siberian No. 1 wheat, grown on the rotation plats, yielded an average of 18.17 bushels per acre and 1,675 pounds of straw.

Hybrid barley No. 19, a hull-less variety, yielded an average of 19.6 bushels per acre and 1,325 pounds of straw. Hull-less barley yields are figured at 60 pounds per bushel.

The Canadian white field pea made excellent growth, ranging from 5 to 7 feet high. The yield of peas averaged 11 tons per acre for silage.

Leader oats and common vetches made fair and uniform growth on all plats. Cut for silage they yielded an average of $7\frac{1}{4}$ tons per acre.

Peas, grown in the alleys between the plats for soiling, were cut July 25 and produced a second crop which was cut September 15.

The rotation plats, some fertilizer plats, and $1\frac{1}{4}$ acres of oats grown for increase were operated at a total expense of \$371.69. The crops in the field had a local market value of \$632.94, and netted a profit of \$261.25 over cost of production.

ALFALFA

Several strains of Grimm alfalfa, which were received from a grower in Wyoming and sown in small plats for comparison, failed to make vigorous growth. The seedlings began to bloom July 15, but set practically no seed. A common strain of Grimm alfalfa growing with the special strains did well and produced a fair crop of seed. However, the plat of this strain has been established for several years.

The hardy, yellow-flowered alfalfa (*Medicago falcata*), which was seeded about four years ago, made only light growth and produced very little seed. In the Tanana Valley it is still a question whether Grimm alfalfa is hardy enough to survive more than a couple of years, whereas the yellow-flowered species never suffers from severe freezing. In the Matanuska Valley, 300 miles south of Fairbanks, the more vigorous Grimm alfalfa seems to be fairly hardy.

ARTICHOKEs

White Jerusalem artichokes have been grown at the Matanuska and Fairbanks stations for two years, but not nearly so successfully as at Sitka. The tops are excellent for silage making. About 2 acres will be planted with the crop next spring and the tops will be cut and placed in the silo early in September. No difference in growth was apparent between crops grown from tubers surviving the

winter at Matanuska and those obtained from Sitka. All the plants made an average height of 6 feet and branched freely. The crop was considerably damaged by a heavy windstorm in early August. The tubers should be left in the ground until spring in regions where the crop does not winterkill, and then replanted 15 inches apart in rows 3 feet apart. The crop responds to rich soil and should be given a top-dressing of sodium nitrate early in the spring to stimulate the growth of tops. The tubers make excellent feed for pigs, and can be used for human consumption, but the yield is light and it is better to grow the crop only for silage making.

CORN

Seed of eight varieties of early corn were sent to the station from the United States Department of Agriculture and planted May 16 in a sheltered place on a south slope land. The varieties C. I. No. 465 and C. I. No. 469 failed to germinate. C. I. No. 478 produced three hills which grew fairly well until August 20, when the stalks were broken in a severe windstorm. C. I. No. 514 produced three hills which grew slowly, showing silk at 10 inches high August 1 and pollen August 3. None of the few kernels setting matured. Pickaninny sweet germinated well, but grew poorly, only a few of the plants reaching a height of 18 inches. Silk appeared August 10 and pollen August 14. A few ears formed, but the kernels did not reach the milk stage. Ninety per cent of the variety Nova Scotia Yellow (C. I. No. 513) germinated well, and the resulting seedlings made fairly vigorous growth. Silk appeared August 14 and pollen August 18. None of the many ears reached the roasting stage or matured. Howe's Alberta Flint, a yellow variety, did fairly well, but the corn failed to mature. No variety of corn has yet been found to be adapted to the short summers of interior Alaska.

ROOT CROPS

Approximately 1.6 acres of land were planted with mangels, rutabagas, turnips, sugar beets, and carrots. Yields were reduced by the dry weather of the early summer. A 0.4-acre plat of mangels yielded 5.86 tons of roots, at a cost of \$17.67 per ton. Rutabagas, sown on a $\frac{1}{2}$ -acre plat, yielded 6.62 tons. The cost of production was \$13.68 per ton. Petrowski turnips sown on a $\frac{1}{5}$ -acre plat, yielded 3.18 tons and were produced at a cost of \$14.12 per ton. Carrots made low yield and the cost of production was \$49.88 per ton. Sugar beets, sown on a $\frac{1}{5}$ -acre plat, yielded 1,330 pounds. The cost of production was 4 cents per pound. The several root crops gave a combined yield of 18.41 tons and were produced at a cost of \$412.26.

POTATOES

The potato is the one dependable cash crop in the Matanuska Valley. The farmers planted a smaller area than usual, probably because of the low prices paid for marketable potatoes. Of 16 varieties grown for comparative purposes at the station, 9 were seedlings originating at the Sitka station and 7 were commercial varieties. Producer and Earliest-of-All, two of the best market varieties, were grown from the crop produced¹ at the station in 1924. Early Ohio, Carman, and

Matanuska, a variety that has been grown in the valley for eight or nine years, were planted among the Sitka seedlings for comparison of vine growth and yield. The outstanding variety of the test was Alida (No. 368), a Sitka seedling, which produced at the rate of 322 bushels per acre of 84 per cent first-grade potatoes. Earliest-of-All and Producer made excellent yields, but the latter was low in percentage of first-grade tubers. The standard market varieties were grown on increase plats for seed and for stock feed.

The varieties White Triumph (White Bliss) and Green Mountain were planted 3 feet 8 inches apart in rows extending north and south and fertilized with a mixture of tankage (75 per cent) and sodium nitrate (25 per cent), applied at the rate of 400 pounds per acre before cultivation when the seedlings were 4 inches high. Four rows were treated alternating with four rows left untreated across the plat. Direct comparisons of the fertilized and unfertilized areas showed that the former yielded 61 bushels more per acre of the Green Mountain and 23 bushels more per acre of the White Triumph (White Bliss) than did the unfertilized area. Prior to planting, the seed was treated for two hours in a weak formaldehyde solution for the prevention of scab. Shallow cultivation was given at frequent intervals after the young plants appeared. The vines grew slowly until August 13, after which frequent showers caused them to make rank growth until digging time, September 25-30.

The general field and test plats occupied 2.403 acres and the rotation plats 0.8 of an acre. The total yield of potatoes was 39,546 pounds, which is equivalent to 19,773 tons. The average acre yield was 6.16 tons. Seventy-nine per cent of the crop, or 31,507 pounds, were first-grade potatoes having a market value of 3 cents per pound, or \$945.21 for the lot; and 8,739 pounds were second-grade potatoes having a market value of 1 cent per pound, or \$87.39. The crop was produced at a cost of \$472.84, and yielded a profit of \$559.76 over cost of production. On January 1, 1926, the local market price of potatoes advanced to 4 cents per pound, which would have increased the value of the crop by \$31.50.

The cost of production, including everything excepting plowing and preparing the seed bed, was practically the same on level stubble land as on hillside land that had been cropped in 1924. The latter was new land that had been stumped in 1923 and plowed late in the fall with a hillside plow, and the seed bed was produced at a cost of \$32.92, as compared with a cost of \$2.91 per acre on the level stubble land.

Variety tests.—Sixteen of the best-yielding varieties were grown in a comparative planting to determine further their relative merits. Each variety occupied a row 220 feet long and 3 feet 8 inches wide, or 0.018 acre. The 10 best varieties and their yields, computed on an acre basis, are Alida, 322.2 bushels; Earliest-of-All, 309.2 bushels; Producer, 297.2 bushels; Carman, 269.3 bushels; Irene, 266.6 bushels; Beatrice, 263.8 bushels; Imogen, 255.5 bushels; Matanuska, 254.6 bushels; Jean, 251.8 bushels; and Ina, 245.3 bushels. Beatrice and Jean ranked the highest, 89 per cent, and Producer the lowest, 70 per cent, in yield of first-grade merchantable potatoes. All the varieties ranked high in cooking quality, as well as in yield, size, and shape of tuber. Six of the varieties, including Alida, Beatrice, and Jean, are seedlings originating at Sitka.

SMALL FRUITS

Currants, raspberries, gooseberries, and strawberries can be grown with notable success in the Matanuska Valley. The varieties Common Red and Perfection Red and some of the white and black varieties in commercial cultivation yielded abundantly. Some of the branches of the white currants were so heavily laden as to be broken or bent to the ground. The canes had spread so as to form a solid hedge in the row. Alternate plants were removed, leaving the remaining ones 4 feet apart each way.

Gooseberries, of which the leading varieties are Champion and Columbus, made good growth and produced heavy yields of fruit.

Of the raspberry varieties, Cuthbert is by far the best for this region. It grows vigorously and fruits abundantly. The plants were set out some four years ago and suckered to such an extent as to necessitate the removal of every second row and every second plant in the remaining rows. A large number of raspberry plants and rooted currants have been distributed among the settlers of the Matanuska Valley. The Cuthbert variety of raspberry is injured by freezing in severe winters. Often that portion of the canes extending above the snow freezes back. Winterkilling can be prevented by bending the canes to the ground and covering them with spruce boughs before the cold weather sets in. The coverings can be weighted down with poles.

Rabbits proved to be very destructive to strawberries during the year, and a large number of the plants were so closely eaten that they died. Runner plants produced at Matanuska and others from Sitka, consisting mostly of the early hybrids Nos. 320 and 1449, were set out in an enlarged bed. The new planting bore practically no fruit in 1925, the plants being too young. Hybrids Nos. 320 and 1440 have proved to be winter hardy and have borne large berries of excellent quality. The plants are vigorous growers and should be spaced 3 feet apart in rows 3 feet apart. When the plants are grown in matted rows they soon become a mass of leaves and bear little fruit.

Berry plants and nursery stock generally should be grown in sheltered locations where the snow accumulates in winter. A covering of snow is vital to safeguard against winterkilling in severe winters.

The Matanuska station has demonstrated that small fruits can be grown successfully in the Matanuska Valley. The region would make a suitable place for a cannery. Once such an enterprise is established undoubtedly sufficient fruit to supply it will be grown by the farmers of the region.

LIVESTOCK

The Milking Shorthorn herd of the station dropped 6 calves—3 heifers and 3 bulls—during the year. One cow, 3 bull calves, 1 yearling bull, and Waterloo Heir, a herd bull no longer needed for service, were sold. King Conjuror, the Shorthorn bull which had been kept at Fairbanks for service during the past year, was returned to Matanuska. The station herd now includes 5 cows, 1 heifer 2 years old, 3 yearling heifers, 3 heifer calves, 1 yearling bull, and the herd bull.

Individual feeding and milk records were kept of the cows. It is interesting to note the milk yields of Milking Shorthorns living under subarctic conditions. No. 1, Lady Belle, yielded 7,247 pounds of milk containing 4.5 per cent butterfat; No. 2, Dairymaid 23d, yielded 6,034 pounds of milk containing 4.4 per cent butterfat; No. 3, Dairy-

maid 33d, yielded 6,819 pounds of milk containing 5 per cent butterfat; No. 4 had a very low milk record and was discarded; No. 5, Valley Queen, yielded 5,836 pounds of milk containing 4 per cent butterfat; and No. 6, Lucile, yielded 7,211 pounds of milk containing 3.9 per cent butterfat. Valley Queen and Lucile were in their first lactation period and give promise of becoming fair producers when they reach their prime. The cows were given a liberal maintenance ration, but were not fed for record milk production.

Lady Belle's feed and upkeep, at local prices, amounted to \$190.37, whereas her butterfat and milk were worth only \$130.40. It is readily seen that production must be very materially increased if dairying is to be made a paying business. Labor wages are very high, \$5 per day being the minimum paid. Dairying could be carried on profitably if fresh milk had an unlimited sale at the ruling price in the interior of 25 cents per quart, and it probably would prove to be remunerative to the farmer and his family who take entire care of their cattle. Livestock raising forms an important part of the farming interests of the region, and crop production can be increased by conserving and applying the manure to the soil.

Transfer of the herd from Kodiak to Matanuska.—The purebred Holsteins and the crossbred Holstein-Galloways, which have heretofore been kept at Kodiak, were transferred to Matanuska in September, 1925. Three years ago plans were made to make the transfer as soon as sufficient ground at Matanuska could be cleared on which to produce feed for the animals. During the past summer a large enough area was brought under cultivation to maintain the combined herds through the winter.

The herd was maintained during the winter at a great expense at Kodiak. Grain fails to mature there, and the necessary concentrated feeds have to be shipped in from Seattle. The cattle do not range much in winter. They must be kept in the barn and fed hay and silage in addition to concentrated feed. Haymaking under Kodiak conditions is difficult and often the hay and silage gathered is spoiled by rains before it can be placed under shelter. The silage and hay must be collected from widely scattered points along the beaches and hauled to the silos at Kodiak. This proved to be expensive because of the necessity of transporting from place to place a crew of men and teams and mowing machinery for cutting and hauling. The herd can be maintained at Matanuska on feed grown in near-by fields with a very great saving in labor costs. These are the main reasons actuating and justifying the transfer of the animals to Matanuska.

The experiment of maintaining a herd at Kodiak on native grass was a success. The grasses are abundant and when cut at the right stage are nutritious. During the summer when the cattle can be pastured, the herds, particularly the Galloways, can be kept in excellent condition. The purebred Holsteins are not entirely at home under Kodiak conditions and it remains to be seen whether they will be at home under Matanuska conditions. Holstein grades have been introduced into Alaskan towns by dairymen, and when milk is profitably retailed the breed may well repay for the extra care it requires in winter.

Crossbreds.—Crossbreeding work was undertaken to develop, if possible, a hardy dairy cow which would be suited to Alaska conditions. The Galloways are ideal cattle for Alaska, but they are poor

milkers and have a short lactation period as compared with typical dairy cattle. Their milk is comparatively rich, however, often containing as high as 6 per cent butterfat. On the whole, the Galloway breed was found to be unsuitable for dairy purposes, although the animals are thrifty, hardy, and excellent rustlers regardless of cold storms. At Kodiak the Galloway was crossed with a heavy-milking breed in the hope of establishing a type of cow combining the desirable characteristics of the former with some of the milking qualities of the latter. A sufficient number of the crossbred cows are now in service to permit comparing their merits with those of the purebred Holsteins and the Milking Shorthorns when they are kept under identical conditions.

At the Matanuska station, where feed is less expensive than it is at Kodiak, the cattle will be fed alike with the view of learning what each breed will yield. The milk records from the crossbred cattle at Kodiak were not as high as might be desired, the yields ranging be-



FIG. 2.—Part of dairy herd, Matanuska station

tween 4,000 and 6,000 pounds per cow per annum. The animals are expected to do better at Matanuska. The transfer disturbed the milk yields of all the cows involved to such an extent as to render unfair an estimate based on the records as they now stand. The crossbreds have retained some of the desirable qualities of the Galloways. They are uniformly black and hornless, thrifty on native grass, and face the storms as unconcernedly as the Galloways, whereas the Holsteins and Shorthorns seek shelter in stormy weather.

The cattle arrived at the Matanuska station from Kodiak September 22, 1925, and were not amiably received by the Shorthorns. The latter began to use their horns on the newcomers with such vigor that dehorning had to be resorted to in order to keep the herd together as a whole. Dehorning caused a disturbance in the milk flow of the Shorthorns, which it has taken several months to overcome. By January, 1926, all three breeds were practically on a par so far as first-class conditions and environment are concerned. (Fig. 2.)

The crossbred herd now includes 9 mature cows, 11 head of young female stock, 4 bull calves, and 1 herd bull. The Holstein herd

includes 1 herd bull, 3 registered cows, and 5 head of young stock. The Shorthorn herd includes 8 head of young stock, 5 cows, and the herd bull.

SILAGE

The silo is proving to be the best feed conserver at the station. It eliminates waste, and practically the entire silage crop is utilized. The weather only slightly hindered the work of harvesting the crops for silage making, and approximately 103 tons were put up by the station at a cost of \$1,007, or \$9.78 per ton. The cost per ton ranged from \$3.44 to \$11.09, varying with the distance the crop had to be hauled, which shows the advisability of growing silage crops as near the barn as possible. Of the various silage crops, vetches and oats and peas and oats make the highest yields at the lowest cost of production. Two-year-old heifers daily gained in weight and kept in thrifty condition when fed 16 pounds of silage, 8 pounds of straw, and 5 pounds of roots. Cows were maintained in a fair flow of milk when fed daily, per 1,000 pounds of body weight, 25 pounds of silage, 10 pounds of straw, 12 pounds of roots, and 4 pounds of barley-oat chop.

STATION IMPROVEMENTS

Land clearing takes first place in improvement work. In one field 15 acres were cleared at a cost of \$1,125. Ten acres were cleared at a cost of slightly more than \$100 each. In another field where a very good burn had been obtained, 8 acres were cleared at a cost of \$366. At least 50 additional acres should be cleared and made ready for the plow.

There were built during the year 320 yards of heavy woven-wire fence to inclose cow pastures and 600 rods of lighter fence for calf inclosures. Two tons of barbed-wire fencing was strung in various places. Labor cost for fencing approximated \$827.

An iron roof was placed on the hay barn at an expense of \$477.78. A cattle shed, 70 feet long, was built at a cost of \$1,112.43, of which \$533.59 was for material. The total cost of setting up a 5-ton wagon and stock scales, with concrete base and foundation, amounted to \$370.78. A direct-current lighting system costing \$1,076.85 was installed in the basement of the pump house to furnish light for all the buildings at the station and power for pumping. The plant was maintained during the year at an expense of \$42.50. A concrete floor was laid in the pump house and the building covered with rustic at a total cost of \$369.65. Finishing the log cabin cost \$292.30. The spaces between the logs were filled with plaster and the inner walls lined with plaster board and the ceiling with felt paper. Repairs to the superintendent's cottage amounted to \$128.45, and to sewer and other pipes, \$105.07. The station now has two tractors, the one formerly at Kodiak having been transferred to Matanuska. These were repaired at a cost of \$247.38. Repairing various farm implements amounted to \$193.10, and replacing miscellaneous supplies to \$72.20. Gasoline, distillate, and oil were purchased during the year at a cost of \$706.83. The fuel burned at the station, except the coal used by the blacksmith, consisted of wood that had been removed from cleared areas, and it was cut and hauled at an expense of \$523.94.

FAIRBANKS STATION

The Fairbanks station is located in the Tanana Valley 300 miles north of the station in Matanuska Valley. Climatic conditions are somewhat different at the two stations, and the daylight period is slightly longer at Fairbanks. The last killing frost occurred May 21, and the first killing frost August 23, giving a frost-free period of 93 days, which is 7 days shorter than for the 15-year average. The rainfall was light in the spring and early summer, but sufficient for the growing grain. (Fig. 3.) During the latter part of August and September heavy rains interfered with the work of harvesting and haymaking. October was comparatively mild with a rainfall of half an inch. The frost-free period at Matanuska was 128 days, a fact which should be taken into consideration in judging the merits of the two regions.



FIG. 3.—Grain in shock, Fairbanks station

SPRING WHEAT

All spring wheat was grown on south slope land. A 3.4-acre plat was seeded to Siberian No. 1 wheat May 19. The land had not been fertilized and had been planted the two years previously with grain crops. The wheat produced a 95 per cent stand and grew vigorously. The crop began heading June 25, was ripe and harvested August 7, and yielded at the rate of 26.7 bushels per acre.

To test their adaptability to the region the following wheats were seeded May 16 on plats ranging from 0.024 to 0.66 acre:

Hybrid No. 30, sown on plats Nos. 23 and 31, was ripe August 15, and yielded at the rate of 30 and 24 bushels, respectively, per acre.

Ruby (S. P. I. No. 6047, station No. 532), sown on plat No. 24, grew 35 inches high and made a fair appearance. However, the heads were imperfectly filled at the tip, which is a common fault of the variety at Fairbanks. The crop was ripe August 15 and yielded at the rate of 19.8 bushels per acre.

Hybrid No. 63, a fine-appearing but low-yielding strain, was seeded on plats Nos. 25 and 30, and yielded at the rate of 17.6 and 13.7 bushels, respectively, per acre.

Irkutsk, No. 134, an early Russian type, was sown on plat No. 26 and yielded at the rate of 21.7 bushels per acre. This is not an attractive wheat, and the heads and grain are small and the straw is short.

Romanow, No. 127, a strong-growing bearded wheat, suitable for general culture except on north slopes, was sown on plat No. 27. The crop ripened August 15 and yielded at the rate of 29.8 bushels per acre.

H. G., No. 82, a bearded, light-glumed wheat with short, dense heads, was sown on plat No. 28 and yielded at the rate of 39.6 bushels per acre.

Omega, Nes. 408 and 409, sown on plats Nos. 32 and 33, were identical in appearance and yield, producing at the rate of 17.7 bushels per acre. The heads were very imperfectly filled for the first time.

Hybrid No. 100, the result of crossing Red Bobs with Hybrid No. 30, and a promising strain with large, well-filled heads and vigorous, strong straw, was sown on plat No. 34. The crop ripened August 15, and yielded at the rate of 28.3 bushels per acre.

Sown on plat No. 35, Hybrid No. 100, a beardless strain, also the result of crossing Red Bobs with Hybrid No. 30, yielded at the rate of 39.6 bushels per acre.

Sown on plat No. 36, Hybrid No. 100, a bearded strain of the same parents, yielded at the rate of 22.6 bushels per acre.

Red Bobs, No. 541, a handsome wheat having beardless, well-filled heads and stiff straw of average length, was sown on plat No. 37 and yielded at the rate of 26 bushels per acre.

Hybrid No. 24, the result of crossing Red Fife with Ladoga, was sown on plat No. 38 and yielded at the rate of 28.1 bushels per acre. This usually late strain ripened this year August 15, due to the comparatively dry season.

BARLEY

Hybrid barley No. 19, a hull-less variety, was sown May 12 on 1.2 acres of land and harvested August 1, 73 days later. The crop made irregular growth due to dry location and yielded only 22.5 bushels per acre.

Eighteen 0.034 and 0.024 acre plats were sown May 14 with varieties that had been grown repeatedly. By August 10 all varieties were ripe, but yields can not be given until the grain is threshed.

OATS

Hybrid No. 51, a hull-less oat, was sown May 15 on an acre plat adjoining the field of Hybrid barley No. 19, and like the latter made irregular growth. The crop was ripe August 5 and yielded at the rate of 29.4 bushels per acre.

North Finnish (Finnish Black) oats was sown May 25 on 6 acres of land. The crop made a good stand and in parts of the field strong growth. Prior to planting the seed was treated with Bayer's compound, copper carbonate, or formaldehyde for smut control. Only the formaldehyde-treated lot produced smut-free grain. The other compounds helped to control smut, but not enough to justify their use. The whole field was harvested August 8 and yielded 34 bushels per acre.

Sixteen 0.024-acre plats each were seeded with various varieties of oats May 18. Most of the varieties made excellent growth and produced good yields.

Fifty acres of land were seeded with oats lightly mixed with spring vetches for hay. In another field of 6 acres barley was used for the same purpose. The land was given a light top-dressing of equal parts of muriate of potash, superphosphate, and nitrate of soda applied at the rate of 200 pounds per acre. The fertilizer was broadcasted, an end-gate seeder and wagon being used for the purpose. The crop was medium heavy and was cut with a binder. Where the vetch made strong growth the hay cured slowly and was damaged by the excessive rains of September. Barley hay cured much better than did the oats. Rabbits were again destructive to the crop.

ALFALFA

A 4-acre field at Ester Siding was seeded to alfalfa (*Medicago falcata*) some years ago. The crop has never done well owing to the poor soil. Weeds have come in and in places partly destroyed the alfalfa. Half the field was cut for hay June 29 and again August 20 primarily to bring the weeds under control. Part of the field, in which the crop had been sown in rows, permitting cultivation for weed control, proved to be a much greater success than that on which alfalfa had been broadcasted. In the former instance the crop grew vigorously and ripened seed.

A 5-acre field was seeded to *Medicago falcata* June 30. The field was also broadcasted. Since cultivation as a means of keeping down weeds greatly increases the cost of growing the crop, a mower will be run over the field several times during the summer to determine the effect on the weeds. If the weeds are not allowed to go to seed the alfalfa should be able to establish itself and hold them in check. Alfalfa production in the interior is limited by (1) lack of seed of sufficiently hardy varieties (so far as it is known the only seed of *M. falcata* in Alaska is produced at the stations); (2) infertility of the soil and lack of nitrogen from bacteria; and (3) the all too prevalent weed infestation on all lands that have been under cultivation for a few years. These problems are gradually being solved by the Fairbanks station, the results obtained at the Rampart station furnishing most valuable data in this regard.

ROTATION PLATS

The maintenance of fertility has already become a vital factor in Alaska farming. A series of 68 tenth-acre plats was laid out in an experiment to determine the best method of conserving soil fertility, the plats being each 24 feet wide (4 drill rows wide) and 185.5 feet long. The plats are permanently marked with iron stakes which have been driven 2 feet into the ground. A level strip of land 11 feet wide extends the full length of the series on both sides. Each series is replicated four times, and the crop is harvested just before the grain ripens.

Table 2 shows the scheme of rotation and continuous culture and the estimated acre yields of the grain or other crop for the first year of the experiment.

TABLE 2.—*Estimated yield of 68 plats in four rotation groups and continuous culture at the Fairbanks station*

Plat No.	Scheme	Yield per acre	
		Bushels	Tons
Group 1:			
1	Continuously cropped with wheat	25.0	
29		14.5	
49		24.3	
65		17.7	
2		38.7	
30		22.5	
50		30.0	
66		27.1	
3		49.7	
31		38.1	
51		49.4	
67		42.8	
4		28.5	
32		20.5	
52		25.6	
68		21.5	
Group 2:			
5	Six-year period	wheat	21.5
6		peas	26.0
7		barley	27.3
8		vetch	15.3
9		oats	48.7
10		turnips	
11	Six-year period	wheat	11.3
12		peas	20.8
13		barley	30.0
14		vetch	14.8
15		oats	45.0
16		turnips	
17	Six-year period	wheat	12.5
18		peas	17.0
19		barley	26.4
20		vetch	14.6
21		oats	48.4
22		turnips	
23	Six-year period	wheat	11.3
24		peas	17.2
25		barley	32.3
26		vetch	14.5
27		oats	38.4
28		turnips	
Group 3:			10.2
33	Four-year period	wheat	20.2
34		oats	19.1
35		barley	20.3
36		peas	25.4
37		wheat	13.5
38		oats and vetch	19.1
39	Four-year period	barley	21.3
40		peas	19.8
41		wheat	21.5
42		oats and vetch	23.4
43		barley	32.5
44		peas	26.2
45	Four-year period	wheat	26.6
46		oats and vetch	19.2
47		barley	27.1
48		peas	29.2
Group 4:			
53	Three-year period	barley	41.6
54		vetch	13.7
55		oats and vetch	30.6
56		barley	30.8
57		vetch	14.3
58		oats and vetch	24.1
59	Three-year period	barley	28.7
60		vetch	13.2
61		oats and vetch	38.0
62		barley	30.6
63		vetch	18.2
64		oats and vetch	29.5

PEAS

Although the early growing season was too dry for the production of a heavy growth of pea vine, the crop yielded approximately 6 tons of green forage per acre. The Canadian field pea produced a heavier

growth than the variety Alaska, which, because of its earliness, has been grown for many years as a field pea at the station. (Fig. 4.) Twelve tenth-acre plats of peas yielded on the average 23.2 bushels per acre of ripe seed. Prior to planting, half the quantity of seed used was treated with a nitrogen-fixing culture obtained from the Oregon Agricultural College, but the resulting plants failed to show the presence of nodule-forming bacteria on the roots.

During the year the station sold 480 pounds of seed of the Alaska variety to the National Canners' Association for distribution among growers in various places and 400 pounds additional to a Michigan grower. The true type of the Alaska variety has the merit of being uniform in growth, the uniformity extending to the canning stage. It is essential that peas for canning reach the same degree of development at the same time. Should the Alaska-grown seed prove to be somewhat earlier than is seed produced elsewhere, the variety will probably find a ready market among canners in the States.



FIG. 4.—Method of curing peas, Fairbanks station

VETCH

The season was too dry for vetch to produce much vine. Results of experiments indicate that vetch is much inferior to peas as a soil builder, and that it is also inferior in point of yield. The root nodules on vetch are small when present at all, and treating the seed with a nitrogen-fixing culture has given only negative results. Of the several varieties tried, the common spring and purple vetches have given the best results. Vetch when mixed with oats increases the forage value of the crop, but also increases the difficulty of curing the hay. The common spring and purple varieties ripen seed freely but make light yields, averaging 14.5 bushels per acre.

TURNIPS

Seed of Petrowski turnips was sown in a small field on north-slope land June 11, and a loaded wheelbarrow was run over the rows to pack the earth. The seed germinated promptly, but was so sparingly

sown as to result in a partial stand. Fourteen crates of typical roots were selected from the crop for seed production during the present year.

A 0.45-acre plat adjoining the above mentioned was seeded in the same manner with the Ostersundum variety. A full stand was obtained, and the crop yielded at the rate of 8.4 tons per acre. The cost of pulling, topping, and hauling amounted to \$8.65 per ton. The variety produces long, tapering roots that are free from laterals. The flesh is coarser than that of the Petrowski. Seed is grown from selected roots of both varieties.

POTATOES

A yield of 8.6 tons was obtained from all varieties of potatoes grown on a 1.3-acre plat. The ground was given a top dressing of complete fertilizer containing nitrogen, phosphoric acid, and potash in the proportion of 2:6:4, respectively, and applied at the rate of 400 pounds per acre. The plat was located on a hillside having good drainage, and the temperature of 28° F. which occurred August 23 did not injure the tops beyond touching the very tips. The growing season was therefore prolonged to September 24. Varieties and their yields per acre include Ohio Jr., 192 bushels; Alaska Beauty, 183 bushels; Eureka, 210 bushels; Early Ohio, 216 bushels; June, 260 bushels; Anna, 235 bushels; Bertha, 242 bushels; Emma, 166 bushels; Alice, 168 bushels; Etta, 257 bushels; American Wonder, 168 bushels; Emily, 128 bushels; Imogen, 255 bushels; Kate, 247 bushels; Jean, 205 bushels; Burpee Superior, 286 bushels; and Irish Cobbler, 186 bushels. June, Anna, Bertha, Emma, Alice, Etta, Emily, Imogen, Kate, and Jean are seedling varieties which were produced at the Sitka station.

CORN

Samples of varieties of early corn were received from the Department of Agriculture and planted at the station. The results were again decidedly negative and further indicative that even the earliest and hardiest varieties are entirely unsuited to the latitude. The stalks of Nova Scotia (C. I. No. 513) reached a height of 40 inches, and the ears were small and imperfectly filled. Howe's Alberta grew 36 inches high and bore small ears which nearly ripened. La Paz (C. I. No. 465), the seed of which was grown in South America at an elevation of 12,600 feet, attained a height of 48 inches but formed no ears. Cuzco Type (C. I. No. 469), the seed of which was produced at an elevation of 7,000 feet in South America, reached a height of 60 inches but did not tassel. C. I. No. 478 grew 60 inches high, was fairly vigorous, but did not tassel. Gaspe (C. I. No. 514) was very dwarf, the stalks reaching only 30 inches high, and the ears were small but well matured at the ground. Pickaninny sweet grew 30 inches high and bore very small ears at the ground. Malakof, the seed of which was obtained from South Dakota, reached 48 inches high, and one ear reached the roasting stage. None Such sweet reached 60 inches high and tassled but bore no ears. Rainbow Flint grew 60 inches high, tasseled, but produced no ears. The same is true of Mammoth Cory. Harbinger sweet reached a height of 48 inches, and several good ears attained the roasting stage. It is the best of the sweet corn varieties. Golden Bantam attained a height

of 48 inches and tasseled but produced no ears. Gehu (C. I. No. 635) grew to a height of 48 inches and had small ears.

LIVESTOCK

The livestock work was continued as outlined in former reports. Two brood sows and a boar, all American Hampshires, are being kept. Two litters of pigs were produced and sold during the year, the females for breeding purposes and the males for marketing as pork.

Three heifers (fig. 5) and a bull calf were dropped in the yak-Galloway crossbreeding work. The calves appeared to be like full-blooded Galloways at birth, but their hair, particularly that on the flank and belly, gradually became long and the tail bushy. In vigor, as indicated by size, the calves are superior to a full-blooded yak heifer calf at about the same age, but not greater than a full-blooded Galloway. The animals are fine appearing, but their breeding propensities and worth as milk and meat producers can not be determined for several years.



FIG. 5.—Yak-Galloway heifers, Fairbanks station

FAIRS

During the year the station entered interesting exhibits of grain and legumes at the southeastern Alaska fair at Juneau, the southwestern Alaska fair at Anchorage, and the Tanana Valley fair at Fairbanks. A box of grain was also delivered to the Alaska Railroad Co. for exhibition in Seattle.

STATION IMPROVEMENTS

A new propagating house, 22 by 23 feet, was constructed during the winter and early spring. (Fig. 6.) The house is built against a hill and is two stories high, the lower story serving for general-work purpose, including a furnace room, and the upper story as the greenhouse proper.

A shed, 30 by 32 feet, was built adjoining the granary on the west end. The shed was constructed of 6 by 6 inch timbers for posts, 2 by 6 inch rafters, and galvanized iron roofing with an open side.

All the material used was taken from dismantled buildings at the Rampart station. The shed houses the threshing machine and will be used to shelter the grain until it is threshed.

A direct-current electric lighting plant, furnishing light aggregating 110 volts and 2,000 watts, was installed at the Fairbanks station. It is in all respects like that installed at the Matanuska station. Each building can now be safely lighted without the liability of fire constantly attending the formerly used lanterns.

A 6-inch tile drain, 450 feet long, was laid across the field to the east of the cottage to carry off the surplus water from melting snows in spring. The snow water has caused much damage in other years by eroding the surface soil, sometimes to a depth of several feet, and necessitating much expense in repair work.

KODIAK STATION

Cattle breeding has been uninterruptedly continued at the Kodiak station since 1907. The experiment was undertaken to ascertain how



FIG. 6.—Fairbanks station. New propagating house in rear

successfully cattle and sheep could be raised on the native pastures in summer and on hay and silage from the native grasses in winter. The climate has proved to be favorable for cattle and sheep raising and the nutritious vegetation sufficient to maintain the animals in thrifty condition. The Galloway breed was originally selected for the experiment and has been found to be eminently adapted to the climate. During all the years the animals have been kept at the station they have bred regularly and remained in excellent condition.

It was expected that the country would develop rapidly with livestock raising as a leading agricultural industry, and the station accordingly planned to meet the situation by furnishing breeding stock to the settlers. However, there has been no increase in settlement and practically no demand for breeding stock. There is a strong demand for hardy milk cows. The station therefore decided to change the character of the herd somewhat, and made reciprocal crosses between the Galloways and purebred Holstein-Friesians which were introduced

for the purpose. The Holsteins are not well adapted to the climate, and have to be stabled and cared for to a greater extent than is required by the Galloways. The crossbreds are hornless and black like the Galloways, and have rangy bodies and short, fine hair like the Holsteins. A number of crossbred cows have been produced and tested for milk yield to learn how they compare in this respect with the Galloways and the Holsteins. The crossbreds are thrifty, maintaining the rustling qualities of the Galloways, and in milk production they are intermediate.

The average Galloway cow of the station herd annually yields 3,000 pounds of milk containing 4 to 6 per cent butterfat. The Holsteins, although kept only for breeding purposes and not for milk production, annually yield 6,000 pounds of milk containing 2½ to 3½ per cent butterfat. The average Galloway-Holstein hybrid annually yields 5,000 pounds of milk containing 4 to 4.8 per cent butterfat. It is a good family cow.

Having amply demonstrated that hardy family cows adapted to the climate can be developed at Kodiak, it was decided to transfer the Holsteins and crossbreds to Matanuska to learn how they would thrive there. Accordingly, on September 17 the herd of 27 crossbred cattle and 8 purebred Holsteins left Kodiak, arriving at Matanuska September 22. Six cows, 1 bull, and 4 calves, all purebred Galloways, were left at Kodiak to maintain a small beef herd.

The Kodiak station will be maintained on a reduced scale for the present, and will be prepared to give advice and assistance to prospective settlers who intend to raise cattle and sheep. The data that have been gathered in past years should be of valuable assistance to settlers. The station has a team of horses and sufficient implements to work the cleared ground covering 23 acres, a good barn and a good silo, two cottages, and a small dairy building, which equipment is more than is needed to maintain the place with the small herd now on hand. The native pastures will supply an abundance of feed for the animals during the summer, and oats and peas can be raised to feed them during the winter. The crop will be made into hay if the weather permits and into silage if the late summer and early fall are very rainy.

RAMPART STATION

This is the final report of the Rampart station, which was closed during the summer because of the failure of Congress to make an appropriation sufficient for continuing its work. (Fig. 7.)

With the expectation that the station would be closed, crop work was reduced, especially with grain. No seeding was made for grain hay. Dismantling of buildings was begun July 13, together with the preparation of machinery and other movable property for transfer to Fairbanks. The work was done during spare time and was completed September 15.

WEATHER CONDITIONS

The winter of 1924-25 was unusually cold, especially during December, January, and February. The daily mean for January was -29.25° F., the minimum temperature was -61° F., and the maximum temperature was 0° F. The total precipitation for the winter,

all in the form of snow, was average. The summer rainfall, 3.7 inches, was below normal for the months of May, June, July, and August. The rainfall of September, 3.65 inches, was the highest recorded for the month. The ice in the Yukon broke May 15, and the water continued to rise until May 26, flooding bottom lands to a depth of 10 feet. A small portion of alfalfa plats lying near the river was under water for eight days. The first part of May was warmer than the average and the snow melted rapidly, the excessive amount of water causing some washing in the fields. The last spring frost occurred May 18, and the first killing frost August 24, giving a frost-free period of 97 days.

GRAINS

Hybrid barley No. 19 was seeded May 4 on two 0.02-acre plats, one each of dark and white-glumed types, on a high knoll where the snow had blown off. Some heads ripened by July 24, and the whole crop was harvested August 6, yielding at the rate of 20 bushels per acre.



FIG. 7.—Rampart station. Alfalfa plats at right

Hybrid oats No. 51 was seeded May 4 on a 0.03-acre plat and harvested August 7. It was 90 per cent mature.

Canadian oats was seeded May 7 on a 0.04-acre plat and harvested August 7. It was 95 per cent mature.

The oats were threshed August 25, but were not kept separate. They were sent to Fairbanks to be used as feed.

Wheat was seeded May 18 on a $1\frac{1}{2}$ -acre plat that had been in vetch for six years, but was taken with grass and weeds. The ground was plowed during August, 1924. Seeding was four days late because the team was not able to keep up with the work to be done. The crop was sold as it stood. It was cut with a cradle August 23 and threshed September 4, yielding at the rate of 14.7 bushels per acre after being recleaned.

LEGUMES

Alfalfa.—*Medicago falcata* averaged, as usual, 2 feet high, and made the best growth on bottom land where the ground did not blow bare of snow. (Fig. 7.) Owing to the scanty rainfall of 3.7 for May, June, July, and August, the alfalfa and vetch will eventually

die where the snow blows from the ground. It is estimated that 100 pounds of seed matured, but very little could be threshed because of the wet weather starting August 17 and the lack of shelter for the crop, the barn and other outhouses having been unroofed. Some of the alfalfa which was under water for more than a week suffered only to the extent that it bloomed a little later than the other. It was making rank growth at the end of the season. One square rod of alfalfa was cut from the bottom field, where it had been sown in rows 3 feet apart. Six rows were cut 1 rod in length. The crop yielded 60 pounds of green weight and 20 pounds of dry weight, which is equivalent to 1.6 tons of hay per acre.

Vetch.—Perennial vetch (*Vicia cracca*), which made such poor growth last year, almost regained its usual vigor and former stand, due, probably, to the heavier snowfall of the winter which supplied the crop with abundant moisture. (Fig. 8.) The plants were late in starting growth, the seed matured late, and the yield was light. The grain threshed 70 pounds as it came from the machine, but this weight will be reduced by re-cleaning. One square rod of the vetch was cut where the stand was good to determine the quantity of forage that can be produced under average conditions. The area produced 100 pounds of green weight, or 8 tons per acre, and 28 pounds of dry weight, or 2.24 tons per acre.

The acre plat seeded last year was used expressly because it has a diversity of features. The wind blows part of the ground bare of snow, a second part is sheltered from the wind, and a third part is in a low sag where the No. 3 draw, which borders one side, formerly had its course. That part from which the snow blows was a failure from every standpoint. Although the winter was one of the coldest on record the plants came through without loss from freezing, but they made weak growth in spring and died during the summer in a direct ratio as to exposure to the winter winds. That part of the plat from



FIG. 8.—Perennial vetch, Rampart station. Yardstick in plat shows height of plants.

which the snow does not blow produced good growth for this, the second year, and the crop bore some seed. This vetch requires three years to reach its maximum growth. Apparently, it is useless to seed perennial legumes or grasses for the purpose of growing a crop where only the summer precipitation is available. The amount of moisture is the limiting factor. At best some of the precipitation of the winter is lost by run-off.

TURNIP SEED PRODUCTION

Roots of the Petrowski turnip were planted on a 0.85-acre plat for seed production. (Fig. 9.) Care was taken to plant them in moist ground although this delayed planting 10 days. The resulting stand was good, but the yield was somewhat reduced by the drought. Approximately 315 pounds of seed were gathered and cleaned. Some of the late-maturing seed was left unharvested when the station was closed.

The continued wet weather in the latter part of the season made harvesting difficult.

SMALL FRUITS

The berry plants were severely damaged by rabbits, and have had to struggle for existence during three successive years of less than normal precipitation. Fully 80 per cent of the strawberry plants on a 1.2-acre plat were lost last year, due to rabbit invasion and to freezing. The surviving plants sent out runners



FIG. 9.—Growing Petrowski turnips for seed, Rampart station

rather late in the season, but no new plants until after the drought was broken August 17. The yield of berries was very light.

The Cuthbert raspberry ripened some excellent fruit late in the season. The small plat of native red currants bore heavily. This plat lies on a southwest slope where the snow lodges to a depth of 5 feet. It is thought that the Cuthbert raspberry on a similar location would do well. However, the plants are killed when kept too long under water from melting snows, as was the case with the strawberry plants.

WEATHER REPORTS

A summary of meteorological data is submitted with this report, the figures of which have been obtained from the United States Weather Bureau and are self-explanatory. By referring to a map of Alaska one can readily locate each place from which the data have been collected and glean a correct idea of the climatic conditions prevailing in different parts of Alaska.

Condensed meteorological reports for 1925

AKULURAK. Latitude 62° 30', longitude 164° 25'. J. M. Treca, observer

Month	Temperature					Total precipitation Inches	Number of days—			
	Maximum °F	Minimum °F	Mean maximum °F	Mean minimum °F	Monthly mean °F		Rain or snow	Clear	Partly cloudy	Cloudy
January	24	-30	-1.0	-12.5	-6.8			13	6	11
February	30	-43	5.5	-9.3	-1.9			9	12	7
March	35	-29	21.9	7.9	14.9			6	7	18
April	37	-3	28.1	15.0	21.6			5	6	18
May	58	9	43.3	29.2	36.2			5	12	13
June	64	37	55.4	43.1	49.2			7	8	6
July	70	40	59.4	47.0	53.2			9	5	17
August	75	42	59.3	47.9	53.6			3	9	19
September	57	32	49.6	41.1	45.4			0	6	23
October	51	21	40.3	32.4	36.4			1	8	20
November	46	-12	27.3	17.7	22.5			0	4	22
December										

ALLAKAKET. Latitude 60° 34', longitude 152° 41'. St. John's Mission, observer

January	4	-61	-27.5	-45.8	-36.6	0.16	5	7	7	17
February	16	-62	-11.4	-40.0	-25.7	.32	5	14	3	11
March	28	-57	12.1	-14.4	-1.2	.94	10	11	3	14
April	42	-16	35.8	7.3	21.6	.13	3	12	3	11
May	73	18	58.9	33.3	46.1	.43	9	10	9	12
June	80	31	71.4	43.3	57.4	1.74	16	12	7	11
July	79	31	68.7	44.7	56.7	2.24	19	11	5	15
August	83	24	68.1	40.2	54.2	1.67	14	10	6	14
September	59	19	52.1	36.2	44.2	4.69	25	3	4	23
October	47	-9	33.9	21.5	27.7	1.83	16	5	3	23
November	30	-42	8.7	-8.3	0.2	1.57	18	9	1	20
December	28	-60	-9.1	-29.9	-19.5	.86	10	18	3	10

ANCHORAGE. Latitude 61° 13'; longitude 149° 52'. W. D. Teeland, observer

January	28	-24	7.4	-6.0	0.7	0.81	9	17	6	8
February	40	-16	19.1	4.5	11.8	.10	6	8	5	15
March	43	-4	31.6	17.5	24.6	.45	9	9	5	17
April	49	19	42.3	28.2	35.2	.25	2	2	11	17
May	64	33	54.2	38.5	46.4	.09	6	2	12	17
June	78	34	58.8	42.5	50.6	.72	10	7	5	18
July	74	42	64.9	48.9	56.9	.97	6	4	13	14
August	76	38	64.0	48.2	56.1	2.07	15	4	7	20
September	70	28	58.3	42.7	50.5	3.54	14	5	7	18
October	61	22	47.8	35.7	41.8	2.44	23	3	6	22
November	41	10	33.3	24.2	28.8	1.47	15	1	4	25
December	52	-15	25.9	9.5	17.7	1.06	6	2	4	25

ANNEX CREEK. Latitude 58° 19', longitude 134° 07'. B. L. Holbrook, observer

January	35	-12	17.8	7.5	12.6	2.72	19	3	8	20
February	41	-14	29.2	14.2	21.7	5.97	13	11	5	12
March	50	10	40.1	26.7	33.4	9.34	21	11	5	15
April	58	26	50.1	33.6	41.8	8.65	21	5	12	13
May	66	32	60.1	38.7	49.4	3.77	10	11	10	10
June	71	36	60.9	41.4	51.2	6.04	8	12	6	12
July	76	40	61.7	44.5	53.1	8.22	16	11	5	15
August	71	36	60.6	43.0	51.8	9.93	15	8	6	17
September	66	32	57.4	42.2	49.8	9.68	16	10	9	11
October	59	31	47.6	40.4	44.0	9.76	21	1	7	23
November	45	22	39.1	32.2	35.6	12.30	27	1	4	25
December	54	24	36.3	29.5	32.9	14.20	24	2	1	28

Condensed meteorological reports for 1925—Continued

BETHEL. Latitude 60° 45', longitude 161° 47'. United States Weather Bureau, observer

Month	Temperature					Total precipitation Inches	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
January	32	-34	19.4	-13.5	3.0	0.06	4	19	0	12
February	-40	-40	-7.0	-7.0	-7.0	.07	2	10	2	16
March	-25	-25	9.5	-27.6	-1.13	1.13	15	6	6	19
April	48	0	39.6	15.6	27.6	.29	10	9	5	16
May	63	10	53.0	29.7	41.4	1.00	10	8	4	19
June	71	29	66.1	40.8	53.4	1.15	14	10	8	12
July	78	36	69.5	45.4	57.4	2.45	11	13	3	15
August	84	36	68.9	46.9	57.9	4.61	18	12	2	17
September	60	31	54.1	42.0	48.0	4.77	25	1	3	26
October	56	19	48.4	33.0	40.7	3.55	18	5	7	19
November	50	-7	27.5	12.2	19.8	.93	6	11	12	7
December	38	-36	19.7	-5.7	7.0	.23	3	17	9	5

CHERNOFSKI HARBOR. Latitude 53° 25', longitude 167° 21'. W. R. Sproat, observer

January	47	11	35.4	25.1	30.2	2.98	16	2	14	15
February	43	14	35.0	26.8	30.8	4.26	20	5	13	10
March	45	20	40.1	30.9	35.5	8.36	22	0	12	19
April	48	26	41.3	31.4	36.4	2.47	21	7	13	10
May	51	26	45.0	35.3	40.2	4.17	24	7	17	7
June	59	32	49.7	38.8	44.2	2.46	17	4	11	15
July	61	40	54.3	44.5	49.4	2.66	15	7	7	17
August	62	38	57.2	46.3	51.8	4.74	16	6	11	14
September	62	35	56.3	45.8	51.0	6.62	22	5	10	15
October	56	31	49.3	40.5	44.9	7.58	25	2	10	19
November	50	28	41.5	33.1	37.3	5.86	21	3	11	16
December	40	14	35.7	27.6	31.6	1.39	13	3	16	12

CORDOVA. Latitude 60° 32', longitude 145° 42'. United States Weather Bureau, observer

January	41	-5	23.8	11.0	17.4	3.85	13	12	6	13
February	40	-2	31.4	16.2	23.8	3.65	15	11	2	15
March	48	4	38.1	25.3	31.7	2.83	21	7	6	18
April	50	24	42.5	31.0	36.8	8.13	21	5	9	16
May	66	31	49.7	37.4	43.6	11.49	18	4	4	23
June	73	37	56.2	43.7	50.0	5.23	16	5	6	19
July	72	40	61.1	48.7	54.9	4.54	15	9	7	15
August	67	40	60.4	48.5	54.4	12.31	15	9	8	14
September	68	31	59.1	44.3	51.7	19.43	10	15	5	10
October	60	31	50.0	41.2	45.6	44.17	25	4	5	22
November	50	28	41.7	34.2	38.0	23.03	26	3	5	22
December	53	6	37.2	27.8	32.5	9.96	20	3	6	22

DILLINGHAM. Latitude 59° 00', longitude 158° 28'. W. N. Reed, observer

January	33	-26	14.0	-2.7	5.6	0.90	4	20	0	10
February	36	-25	20.9	7.6	14.2	-----	3	9	4	15
March	39	-10	30.3	17.1	23.7	-----	10	4	4	17
April	45	13	36.3	24.0	30.2	-----	8	11	11	11
May	60	23	47.0	34.1	40.6	1.49	10	6	4	21
June	74	38	59.0	41.6	50.3	2.01	9	9	7	14
July	80	36	63.7	45.8	54.8	1.27	4	15	5	11
August	75	41	64.3	47.5	55.9	1.67	7	7	4	20
September	64	30	56.6	44.4	50.5	3.66	8	2	5	23
October	59	24	48.5	38.4	43.4	4.75	18	3	5	23
November	47	3	31.0	19.4	25.2	.58	5	3	1	26
December	39	-23	18.7	5.1	11.9	1.16	3	14	0	17

Condensed meteorological reports for 1925—Continued

DUTCH HARBOR. Latitude 53° 55', longitude 166° 30'. O. Kramer, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
January	°F	°F	°F	°F	°F	Inches				
February	45	8	35.3	25.9	30.6	4.15				
March	54	15	44.6	29.0	36.8	5.93				
April	49	22	42.6	30.0	36.3	3.05				
May	55	28	47.3	33.6	40.4	5.10				
June	60	30	52.1	36.3	44.2	2.38				
July	65	38	57.8	43.7	50.8	1.95				
August										
September										
October	60	32	50.7	41.0	45.8					
November	54	24	41.2	31.5	36.4	5.14	21			
December		16		26.6	31.0	1.79				

EAGLE. Latitude 64° 46', longitude 141° 12'. United States Weather Bureau, observer

January	4	-69	-24.6	-41.0	-32.8	0.26	5	17	5	9
February	27	-51	-6.4	-26.8	-16.6	.21	4	10	6	12
March	37	-37	19.5	-4.5	7.5	.17	6	6	6	19
April	50	-3	42.8	16.6	29.7	.12	2	9	7	14
May	71	22	61.6	34.0	47.8	1.15	10	6	9	16
June	82	36	72.1	44.6	58.4	1.64	14	8	3	19
July	95	30	73.2	45.0	59.1	1.06	13	12	7	12
August	82	25	68.6	42.0	55.3	1.57	14	6	4	21
September	64	23	55.8	38.1	47.0	2.78	15	5	2	23
October	56	-4	40.9	28.0	34.4	.94	10	8	5	18
November	40	-20	16.9	5.2	11.0	.45	10	3	2	25
December	32	-49	2.8	-11.3	-4.2	.51	12	12	1	18

FAIRBANKS. Latitude 64° 51', longitude 147° 52'. United States Weather Bureau, observer

January	14	-57	-15.4	-32.3	-23.8	0.39	6	16	4	11
February	28	-43	3.1	-20.4	-8.6	.57	8	10	4	14
March	42	-37	23.3	-1.7	10.8	.72	8	8	9	14
April	49	5	42.2	18.8	30.5	.07	3	11	10	9
May	72	27	64.3	36.1	50.2	.02	2	11	14	6
June	82	35	72.1	44.5	58.3	1.12	8	8	16	6
July	82	35	69.5	43.7	56.6	1.51	12	21	5	5
August	85	28	69.7	43.2	56.4	.67	11	10	6	15
September	63	22	54.8	38.3	46.6	5.61	15	5	6	19
October	63	10	44.2	26.0	35.1	.53	8	8	9	14
November	34	-15	17.0	2.3	8.6	1.19	7	4	8	18
December	31	-45	1.2	-13.0	-5.9	.31	7	8	9	14

FORTMANN HATCHERY. Latitude 55° 36', longitude 131° 25'. Fred Patching, observer

January	42	-6	33.9	24.9	29.4	11.26	27	2	9	20
February	44	2	37.4	16.8	27.1	7.35	14	9	4	15
March	50	10	42.4	27.6	35.0	14.98	20	6	5	20
April	60	16	51.4	30.8	41.1	10.17	20	3	8	19
May	82	30	64.7	39.4	52.0	6.56	15	10	9	12
June	90	36	65.4	46.0	55.7	5.16	14	6	8	16
July	83	41	66.5	48.8	57.6	9.85	17	8	5	18
August	81	39	67.5	50.1	58.8	5.38	17	6	8	17
September	73	28	66.4	42.5	54.4	4.02	8	15	7	8
October	65	25	54.5	39.4	47.0	9.31	19	2	11	18
November	51	27	44.5	36.8	40.6	24.41	26	0	6	24
December	53	29	44.1	36.1	40.1	21.51	27	2	8	21

Condensed meteorological reports for 1925—Continued

FORT YUKON. Latitude 66° 34', longitude 145° 18'. United States Weather Bureau, observer

Month	Temperature					Total precipitation Inches	Number of days—			
	Maximum °F	Minimum °F	Mean maximum °F	Mean minimum °F	Monthly mean °F		Rain or snow	Clear	Partly Cloudy	Cloudy
January	-1	-65	-31.8	-44.0	-37.9	0.02	1	24	2	5
February	10	-60	-18.4	-41.4	-29.9	.25	1	21	1	6
March	28	-41	9.0	-16.5	-3.8	.20	2	19	4	8
April	47	-9	37.6	11.8	24.7	T.	0	18	7	5
May	74	14	59.6	34.8	47.2	.69	4	19	6	6
June	85	36	71.4	49.1	60.2	.51	4	21	4	5
July	86	39	70.3	49.5	59.9	1.63	11	23	5	3
August	82	25	68.3	45.3	56.8	1.33	7	18	6	7
September	62	23	52.8	37.8	45.3	1.77	8	13	6	11
October	47	0	32.3	21.2	23.8	.31	4	14	2	15
November	22	-29	7.5	-5.3	1.1	.52	5	11	4	15
December	17	-52	-5.5	-18.9	-12.2	.45	4	14	2	15

HOLY CROSS. Latitude 62° 16', longitude 159° 50'. Holy Cross Mission, observer

January	24	-58	-4.0	-24.3	-14.2	0.75	5	17	9	5
February	27	-43	5.2	-11.7	-3.2	.39	3	17	7	4
March	56	-30	31.4	10.1	20.8	1.79	9	7	7	17
April	49	4	39.6	19.4	29.5	.54	3	9	15	6
May	70	10	57.6	31.7	44.6	.36	6	18	11	2
June	76	37	68.2	43.9	56.0	1.52	6	14	11	5
July	83	40	70.0	46.4	58.2	2.45	9	19	7	5
August	85	37	68.8	46.6	57.7	2.11	10	12	9	10
September	68	29	58.2	41.4	49.8	6.43	15	2	8	20
October	65	17	47.8	31.5	39.6	1.87	8	11	4	16
November	48	-13	21.2	9.3	15.2	1.17	6	14	4	12
December	39	-38	6.1	-7.0	-.4	.52	6	10	5	16

JUNEAU. Latitude 58° 18', longitude 134° 24'. United States Weather Bureau, observer

January	40	0	22.8	17.0	19.9	5.82	27	3	1	27
February	41	4	32.1	22.3	27.2	3.69	14	6	4	18
March	43	11	37.3	28.7	33.0	6.52	22	3	2	26
April	54	24	45.2	32.5	38.8	6.23	23	2	6	22
May	71	32	56.0	40.0	48.0	4.26	17	4	7	20
June	75	39	60.3	45.5	52.9	4.93	15	7	4	19
July	78	46	61.9	49.5	55.7	7.61	17	6	3	22
August	70	44	61.0	49.0	55.0	7.72	20	4	2	25
September	66	33	58.3	43.2	50.8	8.66	13	12	5	13
October	61	31	49.0	41.7	45.4	8.92	23	3	1	27
November	54	30	43.7	37.2	40.4	11.74	27	0	1	29
December	58	28	42.1	34.2	38.2	10.14	25	0	1	30

KATALLA. Latitude 60° 12', longitude 141° 33'. B. H. White, observer

January	42	-5	26.7	14.0	20.4	3.47	15	11	3	17
February	39	2	31.5	18.2	24.8	3.04	13	8	4	16
March	45	9	36.9	25.5	31.2	5.79	21	7	7	17
April	47	24	40.3	30.7	35.5	7.57	25	1	5	24
May	66	29	48.9	37.0	43.0	8.67	19	5	4	22
June	78	34	55.6	41.6	48.6	5.58	14	7	6	17
July	72	41	61.5	46.4	54.0	5.25	15	8	6	17
August	69	36	60.7	46.8	53.8	6.35	15	6	2	23
September	67	29	58.2	42.7	50.4	8.98	12	10	7	13
October	56	31	49.2	40.3	44.8	26.04	25	0	6	25
November	51	25	42.3	33.5	37.9	15.65	25	1	5	24
December	53	18	40.0	30.0	35.0	10.21	22	3	1	27

Condensed meteorological reports for 1925—Continued

KETCHIKAN. Latitude 55° 20', longitude 131° 37'. W. H. Dickey, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
January	44	12	36.8	28.5	32.6	11.42	23	2	11	18
February	43	15	37.7	25.4	31.6	7.78	14	12	2	14
March	51	21	42.3	31.1	36.7	14.18	23	8	4	19
April	59	25	49.3	33.3	41.3	11.98	17	6	8	16
May	81	33	60.2	40.9	50.6	6.70	14	11	10	10
June	84	38	63.2	47.4	55.3	9.17	15	9	7	14
July	82	43	63.9	49.0	56.4	12.81	15	6	9	16
August	80	42	65.0	50.2	57.6	7.15	20	10	6	15
September	73	32	65.2	43.3	54.2	3.06	7	19	6	5
October	68	27	54.4	39.4	46.9	14.24	18	4	8	19
November	54	29	46.0	37.7	41.8	21.70	28	1	4	25
December	58	29	46.9	38.0	42.4	34.13	27	3	2	26

KODIAK. Latitude 57° 48', longitude 152° 22'. Experiment Station, observer

January	40	1	29.4	18.4	23.9	2.74	9	4	12	15
February	42	3	32.7	22.2	27.4	2.06	9	7	6	15
March	47	10	39.6	27.7	33.6	3.00	15	10	8	13
April	46	26	40.0	30.8	35.4	1.50	9	10	10	10
May	60	31	45.0	36.4	40.7	9.29	26	1	8	22
June	62	37	52.9	41.6	47.2	5.82	16	2	9	19
July	70	40	59.9	46.2	53.0	1.93	11	10	11	10
August	69	43	60.4	49.0	54.7	4.55	12	12	7	12
September	73	34	60.2	47.2	53.7	3.09	8	8	13	9
October	59	35	51.9	43.9	47.9	13.62	26	1	8	22
November	49	24	41.6	33.0	37.3	7.40	17	1	9	20
December	43	3	33.5	24.4	29.0	5.87	17	6	5	20

LATOUCHE. Latitude 60° 03', longitude 147° 53'. Kennecott Copper Corporation, observer

January	39	8	29.3	19.9	24.6	6.54	13	12	6	13
February	42	10	33.7	23.0	28.4	9.19	17	7	3	18
March	50	14	39.6	27.2	33.4	12.83	18	11	4	16
April	52	25	42.3	31.1	36.7	19.93	24	3	6	21
May	66	33	48.4	36.5	42.4	17.68	23	5	2	24
June	72	36	51.2	42.0	48.1	6.00	16	7	3	20
July	76	42	60.8	48.3	54.6	2.80	16	7	7	17
August	71	40	62.7	49.2	56.0	10.05	16	8	6	17
September	72	22	62.2	37.0	49.6	8.38	11	17	2	11
October	56	32	51.8	42.9	47.4	33.22	27	4	2	25
November	54	22	43.7	35.5	59.6	28.52	29	2	3	25
December	48	12	38.2	29.2	33.7	17.34	23	5	3	23

MATANUSKA. Latitude 61° 30', longitude 149° 15'. Experiment Station, observer

January	29	-30	11.3	-7.5	1.9	0.53	8	19	2	10
February	28	-20	18.3	6	9.4	.17	5	16	6	6
March	45	-22	32.6	15.4	24.0	.32	4	8	9	14
April	52	20	44.3	28.8	36.6	.20	5	7	13	10
May	70	29	58.0	37.3	47.6	.07	2	8	11	12
June	75	31	61.1	42.9	53.5	2.20	10	11	7	12
July	77	29	69.0	47.9	58.4	.70	7	11	12	8
August	74	36	65.6	48.3	57.0	3.66	14	5	10	16
September	67	27	59.2	40.5	49.9	7.55	15	10	6	14
October	59	22	49.7	36.7	43.2	1.88	12	5	11	15
November	48	12	37.5	27.0	32.2	.55	2	2	12	16
December	50	-21	18.7	4.6	11.6	1.08	6	6	9	16

Condensed meteorological reports for 1925—Continued

McKINLEY PARK. Latitude 63° 44', longitude 148° 55'. H. P. Karstens, observer

Month	Temperature					Total precipitation Inches	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
January	14	-52	-13.6	-31.2	-22.4	0.16	6	16	1	14
February	38	-47	4.6	-20.0	-7.7	.43	6	10	9	9
March	39	-28	24.8	1.2	13.0	.44	5	6	9	16
April	47	1	37.2	14.9	26.0	1.16	5	5	17	8
May	68	4	54.3	30.3	42.3	.92	3	1	16	14
June	73	29	63.4	38.9	51.2	2.49	12	5	15	9
July	79	32	63.3	41.8	52.6	1.95	9	3	14	11
August	76	28	61.9	40.6	51.2	2.13	12	8	12	11
September	65	16	53.6	35.9	44.8	4.43	16	7	7	16
October	62	7	47.9	31.1	39.5	—	—	5	14	12
November	49	-11	25.3	6.7	16.0	—	—	5	11	14
December	47	-38	13.4	7.8	10.6	—	7	14	7	9

NOME. Latitude 64° 30', longitude 165° 24'. United States Weather Bureau, observer

January	22	-30	1.1	-12.8	-5.8	0.04	4	17	6	8
February	26	-41	5.5	-9.8	-2.2	.11	2	11	7	10
March	35	-34	19.7	5.4	12.6	1.43	12	10	4	17
April	35	-4	29.3	15.9	22.6	1.05	9	4	9	17
May	63	0	43.7	29.8	36.8	.65	4	6	17	8
June	70	34	56.2	41.7	49.0	1.02	7	3	15	12
July	74	38	57.0	45.7	51.4	3.89	15	3	6	22
August	71	32	57.0	45.5	51.2	3.35	15	3	8	20
September	55	26	48.4	40.6	44.5	7.10	26	0	7	23
October	52	21	40.2	31.6	35.9	1.35	12	2	14	15
November	44	0	24.8	15.1	20.0	1.05	9	8	7	15
December	38	-25	11.9	-.2	5.8	.80	10	9	7	15

NOORVIK. Latitude 66° 30', longitude 161°. United States Weather Bureau, observer

January	15	-49	-14.4	-31.1	-22.8	T.	0	23	2	6
February	18	-47	-8.1	-22.8	-15.4	0	0	16	7	5
March	31	-37	11.1	-3.1	4.0	1.31	7	11	7	13
April	40	-16	29.1	11.7	20.4	.45	3	13	9	8
May	73	4	51.9	30.6	41.2	.80	5	19	5	7
June	76	33	65.1	44.1	54.6	.19	3	17	3	10
July	87	40	64.0	46.9	55.4	3.01	15	8	5	18
August	79	36	61.5	46.6	54.0	1.65	12	6	8	17
September	54	22	46.3	36.7	41.5	6.43	23	3	5	22
October	42	10	31.9	23.7	27.8	1.37	11	11	5	15
November	35	-23	12.9	2.8	7.8	.80	8	10	2	18
December	33	-40	.2	-10.8	-5.3	.43	3	13	11	7

PILOT STATION. Latitude 61° 58', longitude 163°. William R. E. Moore, observer

January	20	-38	1.4	-14.2	-6.4	0.62	4	16	5	10
February	31	-42	7.5	-8.7	-.6	.73	5	18	1	9
March	42	-31	27.3	9.6	18.4	2.91	13	9	6	16
April	49	1	35.2	18.5	16.8	.99	8	13	7	10
May	68	6	51.4	29.9	40.6	.60	13	11	7	13
June	72	24	60.8	38.6	49.7	2.20	9	15	7	8
July	80	31	63.5	45.6	54.6	2.74	13	13	5	13
August	84	36	64.5	46.3	55.4	2.67	10	20	0	11
September	66	29	53.1	41.2	47.2	5.46	23	1	2	27
October	56	17	43.6	31.9	37.8	4.19	17	7	3	21
November	58	-6	26.1	12.5	19.3	1.28	8	11	3	16
December	36	-32	10.3	-3.9	3.2	.80	4	16	2	13

Condensed meteorological reports for 1925—Continued

RAMPART. Latitude 65° 30', longitude 150° 15'. Clement Anderson, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
January	0	-61	-23.3	-37.1	-30.2	0.61	13	13	5	13
February	10	-54	-12.7	-29.3	-21.0	.85	8	14	5	9
March	31	-49	10.1	-8.9	0.6	.59	8	8	8	15
April	46	-11	35.6	11.5	23.6	.08	4	6	12	12
May	71	24	58.5	33.9	46.2	.21	5	4	21	6
June	81	35	69.8	44.1	57.0	1.55	13	11	11	8
July	83	34	71.3	45.2	58.2	.65	10	9	9	13
August	88	28	69.5	42.6	56.0	1.29	7	9	14	8
September	65	23	52.9	36.8	44.8	3.65	18	2	7	21
October	43	3	31.9	22.9	27.4	1.45	6	5	2	24
November	27	-19	8.9	0.0	4.4	.96	7	4	9	17
December	21	-48	-1.9	-14.2	-8.0	.47	2	7	11	12

ST. PAUL ISLAND. Latitude 57° 15', longitude 170° 10'. United States Weather Bureau, observer

January	37	4	25.6	18.9	22.2	1.05	13	9	7	15
February	36	-12	23.8	17.2	20.5	1.08	14	2	11	15
March	40	8	32.3	24.9	28.6	1.39	16	4	9	18
April	37	20	33.8	26.9	30.4	.94	15	0	6	24
May	48	21	39.8	31.2	35.5	.73	14	2	9	20
June	51	33	45.4	38.0	41.7	2.14	19	0	2	28
July	56	37	50.3	43.1	46.7	1.60	13	0	7	24
August	61	44	54.0	46.9	50.4	3.92	22	0	3	28
September	54	38	50.5	44.6	47.6	5.82	22	0	5	25
October	49	35	45.3	40.5	42.9	4.50	20	3	9	19
November	46	25	38.2	32.6	35.4	5.31	26	1	11	18
December	38	18	31.0	24.7	27.9	.70	13	0	8	23

SITKA. Latitude 57° 03', longitude 135° 19'. United States Weather Bureau, observer

January	44	7	34.4	24.3	29.4	10.36	27	2	5	24
February	47	14	39.6	24.6	32.1	4.27	13	11	4	13
March	57	23	42.8	30.6	36.7	10.07	23	8	6	17
April	57	26	48.1	32.4	40.2	6.75	21	6	12	12
May	71	33	54.0	39.8	46.9	3.38	16	4	11	16
June	79	36	59.4	44.6	52.0	3.78	15	7	8	15
July	78	46	61.2	48.8	55.0	6.07	19	6	5	20
August	71	41	63.5	48.9	56.2	6.42	20	6	11	14
September	70	33	62.9	44.5	53.7	8.55	15	10	9	11
October	67	27	54.9	42.7	48.8	10.06	26	3	5	23
November	55	30	47.6	37.0	42.3	12.87	28	3	10	17
December	58	27	47.9	37.8	42.8	12.34	26	2	5	24

SKAGWAY. Latitude 55° 27', longitude 135° 19'. F. J. Vandell, observer

January	41	-14	14.8	6.0	10.4	1.39	8	8	2	21
February	40	-13	27.0	14.0	20.5	.63	9	12	2	14
March	44	3	38.7	25.1	31.9	1.22	11	9	4	18
April	54	20	48.1	30.9	39.5	1.98	14	5	6	19
May	75	30	62.4	39.5	51.0	1.42	9	14	4	13
June	83	32	65.8	43.1	54.4	1.18	8	12	8	10
July	83	40	67.5	48.5	58.0	2.67	11	10	9	12
August	72	38	65.1	46.8	56.0	1.72	13	5	8	18
September	71	25	61.5	38.2	49.9	2.17	9	17	4	9
October	62	19	49.7	39.6	44.6	2.19	13	3	5	23
November	46	22	41.3	33.2	37.2	5.06	23	2	4	21
December	48	19	38.4	29.4	33.9	5.63	17	3	5	23

Condensed meteorological reports for 1925—Continued

STRAWBERRY POINT. Latitude 58° 18', longitude 135° 38'. L. F. Parker, observer

Month	Temperature					Total precipitation Inches	Number of days—			
	Maximum °F	Minimum °F	Mean maximum °F	Mean minimum °F	Monthly mean °F		Rain or snow	Clear	Partly cloudy	Cloudy
January	42	-25	30.5	17.1	23.8	4.72	4	0		22
February	48	-7	33.5	12.8	23.2	2.79	8	6		13
March	44	1	38.3	25.7	32.0	3.33	17	3	14	14
April	52	21	45.2	29.3	37.2	2.83		5	4	15
May	69	29	55.8	37.4	46.6		11	11		7
June	73	29	61.5	39.4	50.4	2.27	10	10	10	7
July	78	38	62.0	45.2	53.6	5.16	16	6	11	14
August	77	25	58.7	35.5	47.1	2.72	15	14	8	9
September	71	30	63.4	42.6	53.0	2.84	18	9	12	9
October	57	16	50.5	37.1	43.8	8.00	26	3	6	22
November	54	26	44.7	35.1	39.9			0	2	24
December	47	18	39.8	30.8	35.3		1	1		23

TALKEETNA. Latitude 62° 19', longitude 150° 16'. G. W. Dana, observer

January	30	-41	11.7	-13.1	-0.7	0.78	6	18	2	11
February	34	-32	20.2	-8.1	6.0		11	5		12
March	46	-21	34.2	10.3	22.2	1.39	10	10	5	16
April	53	1	45.5	21.1	33.3	.48	5	7	3	20
May	75	25	60.9	32.6	46.8	.67	5	5		14
June	82	27	68.9	38.1	53.5	2.35	14	6	8	16
July	88	31	72.2	42.0	57.1	1.71	7	10	7	14
August	80	29	68.5	42.0	55.2	5.95	14	9	6	16
September	69	24	58.7	37.0	47.8	8.25	15	7	5	18
October	58	20	48.0	34.7	41.4	5.03	22	4	5	22
November	50	9	34.1	22.9	28.5	2.31	14	2	7	21
December	41	-30	17.4	-3.3	8.6	.60	5	12	9	10

TANANA. Latitude 65° 10', longitude 152° 06'. United States Weather Bureau, observer

January	4	-58	-19.2	-32.3	-25.8	0.44	8	17	7	7
February	11	-52	-9.4	-26.3	-17.8	1.02	10	13	9	6
March	36	-48	14.5	-5.9	4.3	.91	14	8	11	12
April	48	-2	39.0	15.1	27.0	.17	6	10	15	5
May	72	18	60.4	35.3	47.8	.39	6	9	20	2
June	77	34	68.7	43.6	56.2	.93	12	12	12	6
July	79	33	70.0	44.3	57.2	2.08	14	9	14	8
August	82	27	67.7	41.5	54.6	1.44	11	9	15	7
September	60	24	51.9	38.2	45.0	5.73	22	4	9	17
October	46	7	34.7	25.9	30.3	1.25	12	3	13	15
November	28	-26	10.4	.8	5.6	1.19	16	13	4	13
December	26	-55	-3.4	-18.5	-11.0	.19	7	16	12	

WHITE MOUNTAIN. Latitude 64° 40', longitude 162° 20'. T. P. McCollister, observer

January	20	-55	-3.0	-19.7	-11.4	.16	2	23	4	4
February	30	-45	2.6	-13.2	-5.3	.38	4	23	1	4
March	40	-35	21.7	3.5	12.6	1.57	14	13	8	10
April	40	-10	33.5	16.5	25.0	.22	5	12	14	4
May	69	0	55.1	31.3	43.2	.58	8	17	8	6
June	72	30	65.2	40.6	52.9	1.43	7	22	5	3
July	80	38	67.5	45.8	56.6	1.67	9	16	9	6
August	75	31	65.7	44.5	55.1	1.47	10	19	8	4
September	59	28	51.8	37.9	44.9	7.38	20	10	3	17
October	52	15	45.3	25.7	35.5	.93	12	19	3	9
November	46	-18	34.4	6.4	20.4	.02	2	21	9	0
December	35	-33	16.4	-11.4	2.5	.27	4	19	6	6

Condensed meteorological reports for 1925—Continued

WONDER LAKE. Latitude 63° 28', longitude 150° 52'. Mrs. Paula Anderson, observer

Month	Temperature					Total precipitation Inches	Number of days—			
	Maxi- mum	Mini- mum	Mean maxi- mum	Mean mini- mum	Month- ly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F	°F	°F	°F	°F					
January										
February	33	-44	10.3	-21.3	-5.5	2	17	6		5
March	52	-40	28.4	-3.0	12.7	.32	5	21	8	2
April	55	-3	44.0	6.1	25.0			20	6	4
May	70	15	56.9	27.1	42.0	1.72	5	23	5	3
June	72	25	62.0	35.7	48.8	3.34	13	14	14	2
July	80	30	66.4	38.3	52.4	2.78	12	18	11	2
August	80	25	65.4	38.4	51.9	3.80	14	12	13	6
September	66	15	52.9	33.5	43.2	3.61	14	8	11	11
October	60	1	45.3	20.8	33.0	1.01	7	18	4	9
November	40	-22	14.1	-3.1	5.5	.32	3	25	2	3
December	42	-50	1.6	-17.5	-8.0		28	2		1

WRANGELL. Latitude 56° 28', longitude 132° 23'. C. E. Hagie, observer

January	42	2	30.0	22.3	26.2	6.49	27	5	2	24
February	42	1	35.8	22.8	29.3	3.30	11	10	4	14
March	48	21	41.2	31.3	36.2	7.44	20	9	1	21
April	56	28	49.5	34.3	41.9	4.80	18	6	6	18
May	74	35	60.3	42.2	51.2	4.89	15	8	10	13
June	78	39	64.5	47.5	56.0	3.26	16	10	2	18
July	87	39	64.7	49.4	57.0	9.85	18	8	8	15
August	85	34	69.1	47.0	58.0	4.46	19	14	4	13
September	67	31	61.7	42.9	52.3	3.83	10	20	2	8
October	62	25	53.4	38.5	46.0	7.36	19	11	5	15
November	56	28	46.7	35.4	41.0	11.65	29	2	2	26
December	60	26	46.5	34.8	40.6	12.15	24	6	5	20

YAKUTAT. Latitude 59° 33', longitude 139° 44'. Rev. E. M. Axelson, observer

January	40	5	27.4	19.5	23.4	5.54	15	9	1	21
February	39	12	32.9	22.5	27.7	4.64	12	11	0	17
March	41	8	36.9	27.7	32.3	7.53	15	8	3	20
April	47	25	41.0	31.1	36.0	7.17	18	7	3	20
May	53	30	48.5	38.1	43.3	5.81	14	7	2	22
June	76	38	53.8	43.2	48.5	4.86	13	13	2	15
July	64	43	56.5	47.2	51.8	9.88	16	12	6	13
August	62	39	58.1	47.4	52.8	5.09	9	10	6	15
September	62	33	55.1	44.2	49.6	8.73	11	13	4	13
October	54	27	49.3	41.4	45.4	25.55	25	5	0	26
November	49	28	41.7	34.3	38.0	22.92	25	2	1	27
December	49	22	40.2	31.3	35.8	18.24	19	5	0	26



